4.2 AIR QUALITY

Acronyms

AAQS	Ambient air quality standards
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
AIP	Achieved in practice
AMSL	Above mean sea level
AQMP	Air Quality Management Plan
ARB	Air Resources Board
BACT	Best Available Control Technology
CAA	Clean Air Act
CAAQS	California ambient air quality standards
CalEEMod	California Emissions Estimator Model
CAS	Chemical Abstracts Service
CATEF	California Air Toxics Emission Factors
CFR	Code of Federal Regulations
CO	Carbon monoxide
ERC	Emission Reduction Credits
EPA	Environmental Protection Agency
g/bhp-hr.	Grams per brake horsepower hour
GHG	Greenhouse gases
GWP	Glendale Water and Power
H_2S	Hydrogen sulfide
HAP	Hazardous Air Pollutant
HARP2	Hotspots Analysis Reporting Program Version 2
HI	Hazard index
HIA	Hazard Index Acute
HIC	Hazard Index Chronic
HNO_2	Nitrous acid
HNO_3	Nitric acid
ISO	International Organization for Standardization
KW	Kilowatts
LACSD	Sanitation Districts of Los Angeles County
LFG	Landfill gas
LST	Localized significance threshold
MICR	Maximum individual cancer risk
MND	Mitigated Negative Declaration
MW	megawatt
NAAQS	National ambient air quality standards

NG	Natural gas
NMOC	Non-methane organic compounds
NO	Nitric oxide
NO_2	Nitrogen dioxide
NO_x	Nitrogen oxides
NSPS	New Source Performance Standards
NSR	New Source Review
O_3	Ozone
OEHHA	Office of Environmental Health Hazard Assessment
PAH	Polycyclic aromatic hydrocarbons
Pb	Lead
PM	Particulate matter
ppm	Parts per million
ppmv	Parts per million volume
PSD	Prevention of Significant Deterioration
RECLAIM	Regional Clean Air Market
REL	Reference exposure levels
RICE	Reciprocating internal combustion engines
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
scfh	Standard cubic feet per hour
scfm	Standard cubic feet per minute
SCLF	Scholl Canyon Landfill
SCR	Selective catalytic reduction
SIP	State implementation plan
SO_2	Sulfur dioxide
SO_4^{2-}	Sulfates
SO_x	Sulfur oxides
SRA	Source receptor area
TACs	Toxic air contaminants
T-BACT	Best Available Control Technology for Toxics
USEPA	United States Environmental Protection Agency
VOCs	Volatile organic compounds

4.2.1 Environmental Setting

4.2.1.1 Existing Conditions

The proposed Project would be constructed entirely within the existing Scholl Canyon Landfill (SCLF) site located in the central San Rafael Hills. The landfill surrounding the proposed Project site is flanked to the west by two parks – Lower Scholl Canyon Park and Eagle Rock Hillside Park; to the north by Scholl Canyon Golf and Tennis Club; to the south by the Ventura Freeway (California State Route 134); and to the east by the Rose Bowl Stadium.

The Project will be located on the southern side of the landfill. The latitude and longitude coordinates of the Project are 34.153425°, -118.192518° with an elevation of 1,416 feet above mean sea level (AMSL). The SCLF site is located within the South Coast Air Basin (SCAB), which is regulated by the South Coast Air Quality Management District (SCAQMD).

4.2.1.2 Regional Climate

The SCLF is located on the western side of the San Gabriel Valley of the SCAB. The basin is a coastal plain with the Pacific Ocean to the southwest and enclosed by mountains to the north and east which trap air and pollutants in the valley. The regional climate is considered semi-arid and characterized by hot summers, mild winters, and infrequent seasonal rainfall. Glendale is located inland, where the temperatures are generally higher than along the coast due to the lack of sea breezes, with average monthly highs from 65°F to 91°F and lows from 44°F to 62°F. The relative humidity inland is also lower than along the coast (Western Regional Climate Center, 2015).

Due to the topography and weather conditions of the basin, temperature inversions that prevent the vertical mixing of warm and cooler layers of the air tend to form and allow pollutants to remain at ground level. The coastal location of the basin also creates a wind pattern that blows offshore at night and onshore during the day, so that air pollutants formed in the heat of the day tend to stay inland. Major cities like Los Angeles with high population density and heavy vehicular traffic, combined with the climate and geographical configuration, influence air quality in the basin.

4.2.1.3 Ambient Air Quality

Overview of Air Quality Standards

The United States Environmental Protection Agency (EPAUS) establishes national ambient air quality standards (NAAQS) to regulate the concentration of six criteria pollutants in the atmosphere: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur oxides (SO_X), particulate matter (PM10 and PM2.5), and lead (Pb). These pollutants are considered harmful to the public health and the environment.

The EPAUS designates the attainment status of areas in the nation for each criteria pollutant, based on whether NAAQS are met. A “non-attainment area” does not meet the standard and is subject to a State Implementation Plan to attain the standard. Similarly, the California Air Resources Board (ARB) has set its own stricter ambient air quality standards for California and designates regions in the state as

attainment or non-attainment based on those standards. The California ambient air quality standards (CAAQS) include sulfates as a criteria pollutant, which is not addressed in the federal standards.

Both state and federal ambient air quality standards are provided as the maximum allowable concentration over an averaging time of measurement. Maximum concentrations reflect levels of pollutants that can adversely affect human health. The averaging times reflect the potential for short-term or long-term effects. **Table 2** shows the NAAQS and CAAQS.

Table 2 Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	Federal Standards
Ozone	1-Hour (ppm)	0.09	--
	8-Hour (ppm)	0.070	0.070 [a]
Carbon Monoxide	1-Hour (ppm)	20	35
	8-Hour (ppm)	9	9
Nitrogen Dioxide	1-Hour (ppm)	0.18	0.100 [b]
	AAM (ppm)	0.03	0.053
Sulfur Dioxide [c]	1-Hour (ppm)	0.25	0.075
	3-Hour (ppm)	--	0.5
	24-Hour (ppm)	0.04	--
PM10	24-Hour (µg/m^3)	50	150
	AAM (µg/m^3)	20	--
PM2.5	24-Hour (µg/m^3)	--	35 [d]
	AAM (µg/m^3)	12	12 [e]
Lead	30-Day (µg/m^3)	1.5	--
	Rolling 3-Month (µg/m^3)	--	0.15
Sulfate	24-Hour (µg/m^3)	25	--
Hydrogen Sulfide	1-Hour (ppm)	0.03	--
Vinyl Chloride	24-Hour (ppm)	0.010	--

Notes:
AAM = Annual Arithmetic Mean
µg/m3 = microgram(s) per cubic meter
ppm = parts per million

a) On October 1, 2015, USEPA established a new 8-hour ozone standard of 0.070 ppm, effective December 28, 2015.
b) Based on the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area.
c) On June 2, 2010, USEPA established a new 1-hour SO2 standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. The USEPA also revoked both the 24-hour SO2 standard of 0.14 ppm and the annual primary SO2 standard of 0.030 ppm, effective August 23, 2010.
d) Based on 98 percent of the daily concentrations averaged over 3 years.
e) Based on the 3-year average of the weighted annual mean concentrations.

Source: California Air Resource Board, 2016. http://www.arb.ca.gov/research/aaqs/aaqs2.pdf (CARB 5/4/2016)

Table 3 provides the attainment status of the SCAB relative to federal and California ambient air quality standards. The SCAB is currently not in attainment with federal or California Ozone standards, California PM10 standards, and both federal and California PM2.5 standards.

Table 3 State and Federal Air Quality Designations for South Coast Air Basin

Pollutant	Averaging Time	State Designation	Federal Designation
Ozone	1-Hour	Non-attainment	N/A
	8-Hour	Non-attainment	Non-attainment (Extreme)
Carbon Monoxide	1-Hour	Attainment	Attainment
	8-Hour	Attainment	Attainment
Nitrogen Dioxide	1-Hour	Attainment	Attainment
	Annual	Attainment	Attainment
Sulfur Dioxide	1-Hour	Attainment	Attainment
	24-Hour	Attainment	N/A
PM10	24-Hour	Non-attainment	Attainment
	Annual	Non-attainment	N/A
PM2.5	24-Hour	N/A	Non-attainment (Serious)
	Annual	Non-attainment	Non-attainment (Serious)
Lead	30-Day	Attainment	N/A
	Quarter	N/A	Non-attainment (Partial)
Sulfate	24-Hour	Attainment	N/A

Notes:

N/A = not applicable

Lead is in partial non-attainment due to fence line readings at specific industrial lead facilities that are not located near the proposed Project. Regional monitoring stations show attainment with state and federal standards and SCAQMD expects USEPA to re-designate the entire Basin as an attainment area.

Sources: SCAQMD: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/naaqs-caaqs-feb2016.pdf?sfvrsn=14
ARB: https://ww3.arb.ca.gov/desig/changes.htm#summaries
USEPA: https://www.epa.gov/green-book

4.2.1.4 Criteria Pollutants

Ozone (O_3) is formed when volatile organic compounds (VOCs) and nitrogen oxides (NO_X) react with heat and sunlight. Exposure to ground-level ozone can trigger coughing and shortness of breath. It can also aggravate asthma and other lung diseases. Ground-level ozone can also damage sensitive vegetation and ecosystems.

The SCAB is currently designated as non-attainment for ozone by both USEPA and ARB. SCAQMD, as the local air district with jurisdiction over the SCAB, has developed a USEPA approved 8-hour ozone control plan (Air Quality Management Plan or AQMP) with new emission reduction commitments to meet the attainment of federal 8-hour standard by 2023. The AQMP is also intended to demonstrate attainment with the revoked 1-hour ozone attainment. Construction of new emission sources such as those proposed for the Project that are in compliance with New Source Review (NSR) and applicable local, state and federal air quality regulations would be in conformance with the AQMP.

Carbon monoxide (CO) is a colorless, odorless gas formed by incomplete combustion processes. Most CO emissions come from mobile sources. CO reduces oxygen delivery to organs and tissues, resulting in detrimental effects on body systems. With extremely high exposure, CO can cause death. The SCAB is designated as attainment with CO standards by both USEPA and ARB.

Nitrogen dioxide (NO_2) is used as the indicator for the larger group of nitrogen oxides (NO_X). Other nitrogen oxides include nitrous acid (HNO_2) and nitric acid (HNO_3). Nitric oxide (NO) produced from combustion reacts with oxygen in the atmosphere to form NO_2. Health effects from exposure to NO_2 include airway inflammation and aggravated respiratory ailments in sensitive groups. The SCAB is currently designated as attainment for NO_2 by USEPA and ARB.

Sulfur dioxide (SO_2) is part of a larger group of gases known as sulfur oxides (SO_X). SO_2 is formed from the combustion of sulfur-containing fossil fuels, mainly from power plants and other industrial facilities. Exposure to SO_2 can have an adverse effect on the respiratory system. SO_2 emissions in the basin are low due to the use of natural gas by stationary sources and low sulfur transportation fuels. The SCAB is designated as attainment for SO_2 by both USEPA and ARB.

Particulate matter (PM) is a mixture of extremely small solid and liquid particles, including soil, dust, metals, acids (such as nitrates and sulfates), and organic chemicals. The USEPA classifies PM into two categories: PM10 and PM2.5. PM10 consists of coarser particles smaller than ten micrometers in diameter, which is generally found in dusty areas like roadways and construction sites. PM2.5 is a subset of PM10 and consists of finer particles 2.5 micrometers and smaller in diameter, which are generally found in smoke and haze. Exposure to PM can lead to damaging health effects on the respiratory system.

The SCAB is designated as attainment by USEPA and non-attainment by ARB for PM10 standards. The SCAB is designated as non-attainment by USEPA and ARB for PM2.5 standards. SCAQMD adopted an AQMP to meet attainment status for the federal 24-hour PM2.5 standard by 2014; however, since the attainment has not yet been achieved due to the impacts of recent drought conditions, a new PM2.5 control strategy is developed to ensure attainment status of the federal 24-hour PM2.5 standard by 2019. The construction of new emission sources such as those proposed for the proposed Project that are in compliance with NSR and applicable local, state and federal air quality regulations would be in conformance with the AQMP.

Lead (Pb) is a metal that can be found naturally in the environment and in manufactured products. Historically, the major source of lead emissions was from the use of leaded-fuels. Motor vehicle gasoline fuels no longer contain lead, which significantly decreased lead levels in the atmosphere. Today, the

major sources of lead emissions are from lead smelters, battery manufacturing operations, and piston-engine aircraft using leaded gasoline. Lead exposure can result in adverse health impacts to the nervous, kidney, immune, reproductive, developmental, and cardiovascular systems.

The USEPA revised the federal lead standard from 1.5 ug/m^3, which was established in 1978, to 0.15 ug/m^3 on October 15, 2008. A portion of Los Angeles County was designated as non-attainment in the year 2010. In response to the non-attainment designation, the State submitted *the Final 2010 Lead State Implementation Plan – Los Angeles County to EPA*, which provides steps taken that brought the Los Angeles County into attainment by December 31, 2015. The outstanding partial non-attainment designation reflects ambient concentrations that have been detected at fence line locations surrounding select lead processing facilities. No exceedances of ambient lead standards are otherwise detected by the Basin's regional monitoring network. The lead processing facilities that have produced high fence line concentrations are not located near the project and SCAQMD has indicated that due to the implementation of Rules 1420 and 1420.1, the complete Basin will be re-designated as being in attainment with ambient standards for lead.

Sulfates (SO_4^{2-}) are an oxidized form of SO_2 in the atmosphere. This conversion takes place quickly especially in urban areas of California due to regional meteorological features. High exposure can increase respiratory stress and cardio-pulmonary disease. Sulfates can also lower visibility and damage the environment and property. The SCAB is designated as attainment for sulfates by ARB.

4.2.1.5 Existing Air Quality

The region surrounding the proposed Project site has experienced a general improvement in air quality with decreasing concentrations of most pollutants throughout the years. Existing air quality in the area complies with state ambient air quality standards for 8-hour CO, 1-hour NO_2, 1-hour SO_2, and 24-hour sulfate; and federal ambient air quality standards for 8-hour CO and 24-hour PM10. Existing air quality in the area is not in compliance with state standards for 1-hour and 8-hour ozone, 24-hour PM10, and annual PM2.5; and federal standards for 8-hour ozone and annual PM2.5.

The closest monitoring station to the proposed Project site is located in Pasadena, approximately four miles southeast in Los Angeles County. Data for pollutants that are not monitored at this station, such as SO_2, PM10, and lead, are taken from the Los Angeles-North Main Street monitoring station. The second site was chosen based on proximity and general wind direction in relation to the Scholl Canyon Landfill. The Los Angeles-North Main Street monitoring station is located approximately six miles south of the proposed Project site.

SCAQMD and ARB publish information for ambient air quality data on both sites. The SCAQMD data summary is used as the primary source, and the ARB database is used when information is not available on the SCAQMD data summary. **Table 4** presents a five-year background of the criteria pollutants monitored at both the Pasadena and Los Angeles-North Main Street monitoring stations through the year 2018.

Table 4 Background Pollutant Concentrations and Exceedances of State/Federal AAQS

Pollutant	Averaging Time	2014	2015	2016	2017	2018
Ozone	1-Hour (ppm)	0.124[b]	0.111[b]	0.126[b]	0.139	0.112
	Days Exceeding State Standard	(6)	(12)	(12)	(18)	(8)
	8-Hour (ppm)	0.096[b]	0.084[b]	0.090[b]	0.100	0.090
	Days Exceeding State Standard	(13)	(18)	(19)	(36)	(19)
	Days Exceeding Federal Standard	(7)	(18)	(18)	(36)	(19)
Carbon Monoxide	1-Hour (ppm)	3.0[b]	2.6	1.5	2.2	2.0
	8-Hour (ppm)	1.8[b]	1.6	1.0	1.7	1.4
	Days Exceeding State Standard	(0)	(0)	(0)	(0)	(0)
	Days Exceeding Federal Standard	(0)	(0)	(0)	(0)	(0)
Nitrogen Dioxide	1-Hour (ppm)	0.0752[b]	0.0749[b]	0.0719	0.0723[b]	0.0682[b]
	Days Exceeding State Standard	(0)	(0)	(0)	(0)	(0)
	AAM (ppm)	0.0166[b]	0.0153[b]	0.0154	0.0153[b]	0.0144[b]
	98th Percentile 1-Hour (ppm)	0.0601[b]	0.055[b]	0.0584	0.0593[b]	0.0544[b]
Sulfur Dioxide	1-Hour (ppm)[c]	0.0054[b]	0.0126[b]	0.0134	0.0057[b]	0.018[b]
	State Standard	(0)	(0)	(0)	(0)	(0)
	24-Hour (ppm)[a,c]	0.001	0.001	0.001	0.002	0.001
	99th Percentile 1-Hour (ppm)[c]	0.0044[b]	0.0063[b]	0.0025	0.0026[b]	0.0094[b]
PM10	24-Hour (µg/m^3)[b,c]	87	88	67	96	81
	% of Samples Exceeding State Standard[b,c]	(9%)	(8%)	(6%)	(12%)	(9%)
	Federal Standard[b,c]	(0%)	(0)	(0%)	(0%)	(0%)
	AAM (µg/m^3)[b,c]	35.4	33.0	32.4	34.4	34.1
PM2.5	24-Hour (µg/m^3)[b,c]	59.9	56.4	44.39	49.20	43.80
	% of Samples Exceeding Federal Standard[b,c]	(1.8%)	(2.0%)	(0.6%)	(1.4%)	(0.8%)
	AAM (µg/m^3)[b,c]	12.36	12.38	11.83	11.94	12.58
	98th Percentile 24-Hour (µg/m^3)[b,c]	34.5	38.0	27.3	27.8	30.5
Lead	30-Day (µg/m^3)[c]	0.013	0.013	0.016	0.017	0.011
	Quarter (µg/m^3)[c]	0.011	0.011	0.011	0.011	0.011
Sulfate	24-Hour (µg/m^3)[b,c]	11	6.1	5.8	5.1	4.5
	State Standard	(0%)	(0%)	(0%)	(0%)	(0%)

Pollutant	Averaging Time	2014	2015	2016	2017	2018
Notes: ppm = parts per million of air by volume µg/m3 = micrograms per cubic meter AAM = annual arithmetic mean (#) = Number of days exceeding the federal or state standard (%) = Percentage of samples exceeding the federal or state standard a) Data obtained from ARB, all unmarked data from SCAQMD b) Less than 12 full months of data, may not be representative c) PM10, SO_2, Pb and Sulfates from Los Angeles monitoring station (Station No. 087) when not available for Station 88 (Pasadena) Sources: South Coast Air Quality Management District - Historical Air Quality by Year, Data Tables 2014-2018 (www.aqmd.gov/home/library/air-quality-data-studies/historical-data-by-year) California EPA (Air Resources Board) - Air Quality and Meteorological Information System (www.arb.ca.gov/aqmis2/aqdselect.php?tab=daily)						

4.2.2 Laws, Ordinances, Regulations, and Standards

USEPA implements the federal Clean Air Act (CAA), a law that regulates air emissions from stationary and mobile sources. NAAQS were established under the CAA to regulate pollutants considered harmful to public health and the environment. Areas that are in attainment of the NAAQS are regulated under the Prevention of Significant Deterioration (PSD) program, while areas that are not in attainment of the NAAQS are regulated under the nonattainment NSR program. The NSR and PSD requirements apply to new construction or modification of industrial sources that emit air pollutants.

ARB, SCAQMD and 34 other air districts implement the California CAA which precedes the federal CAA and establishes stricter ambient air quality standards (AAQS). Each of the 35 local Air Pollution Control Districts in California has its own NSR program and issues permits for the construction and operation of stationary emission sources. Depending on the amount of pollutants that will be emitted from a source and the area designation for that pollutant, the source may be required to install Best Available Control Technology (BACT). In addition, sources may also be required to mitigate or "offset" the increases in emissions.

This Project is subject to SCAQMD rules and regulations. SCAQMD has the principal responsibility for developing plans to meet the NAAQS and CAAQS; implementing permit programs for the construction, modification, and operation of air pollution sources; and enforcing air pollution regulations for non-mobile sources. The nonattainment NSR program has also been delegated by USEPA to SCAQMD and implemented through SCAQMD Regulation XIII.

4.2.2.1 Federal

Title 40 Code of Federal Regulations, Part 52, Subpart A, Section 52.21 – Prevention of Significant Deterioration of Air Quality

This subpart of the Code of Federal Regulations (CFR) sets forth requirements when a significant increase of attainment air contaminants occurs at an existing major stationary source of criteria pollutants, or when a new facility is considered a major source. PSD applies when the region is in attainment with federal ambient air quality standards for a pollutant. In the South Coast Basin, attainment with federal air quality standards has been reached for CO and NO_2 and PM10. The proposed Project is not expected to emit more than 250 tons per year for CO and NO_2 and 15 tons per year for PM10; therefore, it is not classified as a major source subject to federal PSD.

Title 40 Code of Federal Regulations, Part 60, Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines; Subpart WWW – Standards of Performance for Municipal Solid Waste Landfills; Proposed Subpart XXX – Standards of Performance for Municipal Solid Waste Landfills That Commenced Construction, Reconstruction, or Modification on or After July 17, 2014.

These subparts are applicable to the proposed Project. SCAQMD has been delegated the authority to implement and enforce these federal regulations. Under SCAQMD Regulation IX, these subparts were adopted and made part of the Rules and Regulations of the SCAQMD. The proposed Project meets the standards set by SCAQMD Rules and Regulation and the implementation of BACT for new sources, SCAQMD Rule 431.1 - Sulfur content of gaseous fuels, Rule 1110.2 - Emissions from Gaseous and Liquid Fueled Engines, and Rule 1150.1 – Control of Gaseous Emissions from Municipal Solid Waste Landfills. **Table 5** shows the comparison the applicable federal and SCAQMD standards.

Table 5 Title 40 CFR Part 60 Applicable Emission Standards and Complementing SCAQMD Regulation

Federal Regulation	Type of Pollutant	Emission Standards	SCAQMD Regulation	Emission Standards
NSPS Subpart JJJJ (Landfill Gas Engines)	NO_X	150 ppmv @ 15% O_2	Rule 1110.2	11 ppmv @ 15% O_2
	CO	610 ppmv @ 15% O_2	Rule 1110.2	250 ppmv @ 15% O_2
	VOC	80 ppmv @ 15% O_2	Rule 1110.2	30 ppmv @ 15% O_2
NSPS Subpart WWW (Landfill)	$NMOC_a$	98% reduction efficiency or 20 ppmv as hexane @ 3% O_2	Rule 1150.1	98% reduction efficiency or 20 ppmv as hexane @ 3% O_2
NSPS Subpart XXX (Landfill)	$NMOC_a$	98% reduction efficiency or 20 ppmv as hexane @ 3% O_2	Rule 1150.1	98% reduction efficiency or 20 ppmv as hexane @ 3% O_2

Notes:

NMOC: Non-Methane Organic Compounds

NSPS: New Source Performance Standards

ppmv: Parts per million volume

SCAQMD Regulation IX currently does not include 40 CFR 60 Subpart XXX; however, the Regulation IX is currently being amended, which will this subpart.

Title 40 Code of Federal Regulations, Part 63, Subpart AAAA - National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills

This subpart establishes national emission standards for hazardous air pollutants for existing and new municipal solid waste landfills. To demonstrate compliance with this subpart, the facility must comply with the requirements of 40 CFR Part 60 Subpart WWW. As discussed previously, the proposed Project is expected to comply with the subpart WWW; therefore, compliance with subpart AAAA is expected.

Title 40 Code of Federal Regulations, Part 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

This regulation establishes national emission and operating limitations for Hazardous Air Pollutant (HAP) emissions from stationary internal combustion engines. Compliance with this subpart is achieved by meeting the emission standards of 40 CFR Subpart JJJJ. Subpart JJJJ specifies that new area sources of HAPs comply with the subpart by complying with the new source pollution standards of 40 CFR 60 Subpart JJJJ. As discussed in the above section, the proposed engines meet the emission standards of Subpart JJJJ; therefore, compliance with Subpart ZZZZ is also expected.

Title 40 Code of Federal Regulations, Part 70 – State Operating Permit Programs

The requirements of the operating permit program under this regulation apply to facilities that are classified as major sources or subject to certain NSPS requirements. The operating permit program implements Title V of the federal CAA and is carried out at the regional level under SCAQMD's Regulation XXX. All applicable federal performance standards, operating, monitoring, recordkeeping, and reporting requirements have to be issued for permits under this regulation.

A facility in SCAB is subject to Title V requirements if it has the potential to emit greater than 10 tons per year of NO_X or VOC, 100 tons per year of SO_X, 50 tons per year of CO, or 70 tons per year of PM10; 25 tons per year for combined HAPs or 10 tons per year for individual HAP.

Since the proposed Project will exceed the thresholds above for NO_X and VOCs, a Title V application for this proposed Project will be submitted to comply with this regulation.

4.2.2.2 State

California Code of Regulations, Section 41700

This regulation prohibits the discharge of air contaminants from a facility in quantities that will negatively affect the health and safety of the public, businesses, or properties. The Project will be subject to permit conditions that ensure no adverse public health effects or nuisance will result from the facility.

4.2.2.3 Local

South Coast Air Quality Management District Rule 403 – Fugitive Dust

The purpose of this rule is to reduce PM emissions from anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions. During the construction phase

of the proposed Project, the following control measures as listed in Table 1 of Rule 403 will be taken to reduce the fugitive dust emissions:

a) Apply sufficient amount of water to prevent the generation of visible dust plumes during demolition and earth-moving activities.

b) Stabilize material while loading, transporting, and unloading to reduce fugitive emissions.

c) Establish traffic and parking areas for construction activities by using road barriers.

South Coast Air Quality Management District Rule 407 – Liquid and Gaseous Air Contaminants

This rule limits CO emissions to 2,000 ppm and SO_X emissions to 500 ppm, averaged over 15 consecutive minutes. The proposed equipment will meet the CO limit. The proposed equipment is exempt from the SO_X limit of this rule because it complies with the sulfur content requirements of Rule 431.1 for gaseous fuels.

South Coast Air Quality Management District Rule 409 – Combustion Contaminants

This rule prohibits contaminant emissions of more than 0.1 grain per cubic foot of gas at 12 percent CO_2 at standard conditions, averaged over 15 consecutive minutes. Emissions from internal combustion engines are exempt from this rule, and the proposed engines and existing flares are expected to comply with the emission limits of this rule.

Rule 431.1 – Sulfur Content of Gaseous Fuels

This rule limits the sulfur content of landfill gas to less than 150 ppmv averaged over 24 hours, calculated as hydrogen sulfide (H_2S). A sulfur removal system will be installed to reduce the sulfur content of landfill gas fuel used in this Project to the levels below this limit; thus, compliance with the rule is expected.

South Coast Air Quality Management District Regulation IX – Standards of Performance for New Stationary Sources

This regulation incorporates Title 40 CFR, Part 60 of the CFR, and is applicable to all new, modified, or reconstructed sources of air pollution. Subparts JJJJ of this regulation apply to the proposed stationary engines. These subparts establish emission limits, monitoring, and test method requirements. Compliance with Subpart JJJJ will be achieved through the application of BACT and compliance with SCAQMD Rule 1110.2.

This regulation currently does not include Subpart XXX; however, the proposed amended regulation will include Subpart XXX. SCAQMD envisions presenting the amended regulation to its Governing Board for adoption in July 2019. Compliance with Subpart XXX will be achieved through the application of BACT and compliance with SCAQMD Rule 1150.1.

South Coast Air Quality Management District Rule 1110.2 – Emissions from Gaseous and Liquid-Fueled Engines

Rule 1110.2 sets emission standards for engines that combust 90 percent or more landfill gas based on the higher heating value of the fuels. The applicable standards for biogas engines are 11 ppmv NO_X, 30

ppmv VOC, and 250 ppmv CO (all at 15 percent O_2). Emission control systems such as the proposed selective catalytic reduction (SCR) and CO oxidization systems are needed in order for the proposed landfill gas engines to meet these emission standards.

Rule 1150.1 – Control of Gaseous Emissions from Municipal Solid Waste Landfills

This rule requires landfill gas control devices to be operated continuously to reduce methane by at least 99 percent by weight and NMOC by at least 98 percent by weight or reduce the outlet NMOC concentration to less than 20 ppmv, dry basis as hexane at three percent oxygen. If lean burn engines are utilized as the gas control units, the engines shall reduce the outlet methane concentration to less 3000 ppmv, dry basis, corrected to 15 percent oxygen. An initial source test for the proposed equipment will be required to demonstrate compliance with this rule.

South Coast Air Quality Management District Regulation XIII – New Source Review (NSR)

The SCAQMD regulatory framework includes two options for implementing new source review. Certain facilities included in the Regional Clean Air Market (RECLAIM) cap and trade program for NO_X and SO_X are subject to the new source review requirements of Regulation XX. Facilities that are not part of RECLAIM are subject to the NO_X and SO_X new source review requirements of Regulation XIII. New source review for VOC, CO and PM is administered through Regulation XIII for all facilities. The proposed Project is to construct and operate a new landfill gas energy recover facility; therefore, the proposed Project is exempted from the RECLAIM program. The Project is instead subject to the new source requirements of Regulation XIII for all criteria pollutants.

South Coast Air Quality Management District Rule 1303 – New Source Review Requirements: Best Available Control Technology

Rule 1303(a) requires any new or modified source which results in an emission increase of any nonattainment air contaminant, any ozone depleting compound, or ammonia to meet the BACT requirement. BACT is the most stringent emission limitation or control technology which has been achieved in practice (AIP), is contained in any state implementation plan (SIP) approved by the USEPA, or is another technology that has been found to be technologically feasible and cost effective by the Air District. **Table 6** provides a summary of recent BACT determination for the proposed equipment. The BACT determinations for NO_X, VOC, and CO for reciprocating internal combustion engines reflect compliance with emission standards in Rule 1110.2.

Table 6 BACT Determinations for Landfill Gas Combustion Equipment

Equipment Type	Pollutant	BACT Emission Rate
Internal Combustion Engines	NO_X	11 ppmv at 15% O_2
	VOC	30 ppmv at 15% O_2
	CO	250 ppmv at 15% O_2
	PM10/2.5	0.066 g/bhp-hr.
	SO_X	60 ppmv of sulfur content in the landfill gas
	NH_3 (Slip)	5 ppmv at 15% O_2

South Coast Air Quality Management District Rule 1303 – New Source Review Requirements: Air Quality Modeling

Rule 1303(b)(1) requires an analysis to demonstrate compliance with ambient air quality standards. An air quality dispersion analysis must be conducted using a mass emissions-based analysis or an approved dispersion model to evaluate the impacts of the proposed Project. An air quality dispersion analysis was conducted to demonstrate that the proposed Project will not cause or significantly contribute to a violation of state and federal ambient air quality standards. The results of the analysis are discussed in Section 4.2.4 of this report.

South Coast Air Quality Management District Rule 1303 – New Source Review Requirements: Emissions Offsets

Rule 1303(b)(2) requires emission increases to be mitigated through one of several offset programs. For the proposed Project, emission mitigation can be accomplished by Emission Reduction Credits (ERC) approved pursuant to Rule 1309, allocations from the Priority Reserve pursuant to Rule 1309.1 for essential public services, or allocations from the Offset Budget pursuant to Rule 1309.2 for small sources. SCAQMD established the Priority Reserve to provide credits for innovative technology, research operations, and essential public service. Similar to ERCs, Priority Reserve credits are real, quantifiable, and permanent credits.

Since construction and operation of a landfill gas processing facility is considered to be an essential public service, Priority Reserve credits are expected to be granted for this Project pursuant to Rule 1309.1 for pollutants that exceed small source thresholds.

South Coast Air Quality Management District Rule 1401 – New Source Review of Toxic Air Contaminants

Rule 1401 establishes allowable risk thresholds for permit units that emit toxic air contaminants (TACs). Depending on the pollutant, the rule specifies limits for maximum individual cancer risk (MICR), cancer burden, and/or non-cancer acute and chronic Hazard Indices (HI and HC).

Emission controls, which are considered to be Best Available Control Technology for Toxics (T-BACT), will be implemented for the proposed engines to minimize TAC emissions. Sources that include the utilization of T-BACT may be subject to a MICR threshold that is equivalent to State standards for new sources and the CEQA significance threshold.

A health risk assessment was conducted to determine MICR, HI, and HC of this Project. The results of the assessment are discussed in Section 4.2.4 of this report.

South Coast Air Quality Management District Regulation XVII – Prevention of Significant Deterioration

Pursuant to Rule 1704(a)(1) and (4), the proposed Project is exempt from the requirement of PSD analysis per Rule 1703(a)(3) since construction and operation of a landfill gas processing facility is an essential public service facility and it is also categorized as a resource recovery project. Potential annual emissions of all criteria pollutants (NO_X, VOC, CO, SO_X, PM10 and PM2.5) are also below the PSD applicability thresholds of SCAQMD Regulation XVII and 40 CFR Part 52, Subpart A.

Regulation XXX – Title V

This regulation implements the operating permit requirements of Title V of the CAA as amended in 1990. USEPA has delegated to SCAQMD implementation authority over the federal program through local regulations that are as stringent, if not more stringent, than the federal regulations. Therefore, compliance with this regulation would result in compliance with the federal Title V program.

The Project would exceed the Title V applicability thresholds listed in this regulation for several pollutants and would require a Title V permit.

4.2.3 Methodology and Threshold of Significance

4.2.3.1 Methodology

The evaluation of potential impacts to regional and local air quality that could result from construction and long-term operation of the proposed Project is conducted as follows.

Construction Impacts

Construction of the proposed Project will include the removal and relocation of existing buildings, tanks, and related infrastructure. The onsite construction activities would consist of installation of the proposed power generation Project facility, natural gas pipeline, water pipeline, and two water tanks. Construction emissions including those due to earth moving activity were calculated using California Emissions Estimator Model (CalEEMod) version 2016.3.1. CalEEMod calculates both the daily maximum and annual emissions for criteria pollutants and annual greenhouse gases (GHG).

Operational Impacts

Operational emissions would come mainly from stationary equipment, but some indirect emissions such as those from the daily transportation of employees, visitors, contractors and goods will contribute as well.

Emissions due to facility occupancy, such as vehicle trips, energy and water usages, and waste disposed, were calculated using CalEEMod version 2016.3.1. Emissions from stationary equipment were calculated using SCAQMD BACT standards, manufacturer guaranteed emission factors, laboratory and source test data, and default emission factors provided by USEPA AP-42 or ARB. The maximum daily emissions were then compared to SCAQMD mass daily significance thresholds.

In addition to emission inventory, air dispersion modeling was conducted to analyze further impact of criteria pollutant emissions. The software for the modeling used was Providence BEEST AERMOD software (version 16216r). The results of the modeling were compared to the federal and state ambient air quality standards.

Carbon Monoxide Hotspots

The traffic emissions of this proposed Project were estimated using CalEEMod version 2016.3.1. Given the nature of the project, the impact to traffic surrounding the proposed Project site is minimal.

Toxic Air Contaminants Impacts

To analyze the public health impact of TAC emissions to the surrounding area of the proposed Project, health risk assessment modeling was conducted using the air dispersion modeling (BEEST AERMOD) and the ARB Hotspots Analysis Reporting Program Version 2 (HARP2). The results of the modeling were compared to cancer and non-cancer risk thresholds to determine the significance of the proposed Project's impacts.

4.2.3.2 Threshold of Significance

As determined in the Biogas Renewable Generation Project Initial Study, the proposed Project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. The following three checklist questions were used to determine if the Project could result in potentially significant impacts and are therefore evaluated in this EIR.

Based on Appendix G of the CEQA Guidelines, implementation of the proposed Project would result in a significant impact related to air quality if it would:

a) Conflict with or obstruct implementation of the applicable air quality plan.

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard.

c) Expose sensitive receptors to substantial pollutant concentrations.

Pursuant to the State CEQA Guidelines (Section 15064.7), a lead agency may consider using, when available, significance thresholds established by the applicable air quality management district or air pollution control district when making determinations of significance. For purposes of this analysis, the City has determined to assess the potential air quality impacts of the proposed Project in accordance with the most recent thresholds adopted by the SCAQMD in connection with its CEQA Air Quality Handbook, Air Quality Analysis Guidance Handbook, and subsequent SCAQMD guidance, as summarized in **Table 7**. If the impacts equal or exceed any of the criteria, they may be considered significant.

Table 7 SCAQMD Air Quality Significance Thresholds

Mass Daily Thresholds		
Pollutant	**Construction**	**Operation**
NOx	100 lbs./day	55 lbs./day
VOC	75 lbs./day	55 lbs./day
PM10	150 lbs./day	150 lbs./day
PM2.5	55 lbs./day	55 lbs./day
SOx	150 lbs./day	150 lbs./day
CO	550 lbs./day	550 lbs./day
Lead	3 lbs./day	3 lbs./day
TACs and Odor Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
AAQS for Criteria Pollutants		
NO_2 1-hour average Annual arithmetic mean	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM10 24-hour average annual average	 Increase of 10.4 µg/m^3 (construction) & 2.5 µg/m^3 (operation) 1.0 µg/m^3	
PM2.5 24-hour average	 Increase of 10.4 µg/m^3 (construction) & 2.5 µg/m^3 (operation)	
SO2 1-hour average 24-hour average	 0.25 ppm (state) & 0.075 ppm (federal – 99th percentile) 0.04 ppm (state)	
AAQS for Criteria Pollutants		
Sulfate 24-hour average	 25 µg/m^3 (state)	
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	
Lead 30-day Average Rolling 3-month average	 1.5 µg/m^3 (state) 0.15 µg/m^3 (federal)	

4.2.3.3 Localized Significance Thresholds

The SCAQMD has also developed localized significance thresholds (LSTs) to assess the localized air quality impacts from construction and operation based on the project location and distance to the nearest sensitive receptor. LSTs are only applicable for NO_X, CO, PM10, and PM2.5. SCAQMD has developed screening level emission rate thresholds for each source receptor area (SRA) in the region to aid in determining if a project may generate significant impacts to the localized air quality. These tables are intended to be used for a project with a size less than five acres. Projects with emissions that exceed the screening threshold may be subject to more complex analyses to determine the significance of their impact on air quality.

SCAQMD provides a lookup table by source receptor area for allowable emissions in pounds per day as a function of receptor distance from 25 to 500 meters and the size of the project. The nearest SRA is West San Gabriel Valley (SRA8) located at 752 S. Wilson Avenue in Pasadena. The size of the proposed Project is larger than two acres and the nearest receptor is more than 500 meters from the proposed Project; however, the LST threshold for two acres and a receptor distance of 500 meters was applied to provide a more conservative analysis. This is a conservative approach because it overestimates the concentration of pollutants across the 2.2-acre site and a receptor closer to the emissions sources than would actually occur during proposed Project implementation. **Table 8** shows the localized air quality significance threshold based on 500 meters receptor distance and a project size of two acres.

Table 8 SCAQMD Localized Air Quality Significance Thresholds at SRA8

Pollutant	Construction	Operation
NOx	175 lbs./day	175 lbs./day
CO	7,957 lbs./day	7,957 lbs./day
PM10	160 lbs./day	39 lbs./day
PM2.5	82 lbs./day	20 lbs./day

4.2.4 Project Impacts

Threshold: Would the Project conflict with or obstruct implementation of the applicable air quality plan?

The Project would not conflict with or obstruct the implementation of the applicable air quality plan because the significance levels of the proposed Project from construction and operation activities are determined to be below the significance thresholds.

4.2.4.1 Construction Impacts

Demolition and construction of the proposed Project will include the removal and relocation of the proposed power generation Project facility, natural gas pipeline, water pipeline, and two water tanks.

Emissions from construction activity were calculated using CalEEMod version 2016.3.1. CalEEMod estimates both the daily maximum and annual average emissions of criteria pollutants and annual GHG.

The model calculates emissions caused by demolition, site preparation, grading, building, coating and paving activities from the following sources:

- Off-road construction equipment
- Fugitive dust from material movement in site preparation and grading, demolition, and vehicle trips
- On-road mobile equipment associated with workers, vendors, and hauling
- VOC emissions associated with architectural coating

For the proposed Project, the model parameters provided in **Table 9** were used to estimate construction emissions. CalEEMod default factors were used for other input parameters such as trips, mileage, and VOC coatings content.

Table 9 CalEEMod Input Parameters

Input Parameters Type	Specification
Project Location:	Glendale
Land Use Type:	General Light Industry
Total Building Size (est.):	5,500 ft^2 [a]
Construction Schedule (5 days/week working schedule)[b]:	
Demolition:	23 days
Site Preparation:	20 days
Grading:	45 days
Building Construction:	195 days
Paving:	20 days
Architectural Coating:	12 days
Dust from Material Movement:	
Total Acres Graded (Site Preparation):	2 acres
Total Acres Graded (Grading):	3 acres
Material Exported during Grading:	14,000 cubic yard[s]
Distance of hauling trip (round trip):	1,400 feet (0.26 miles)[c]
Demolition:	
Amount of material demolished (est.):	24,664 ft^2
Construction Vehicles Trips[d]:	
Demolition:	10 worker trips/day, 5 vendor trips/day, and 112 hauling trips
Site Preparation:	10 worker trips/day and 10 vendor trips/day
Grading:	10 worker trips/day, 10 vendor trips/day, and 875 hauling trips
Building Construction:	10 worker trips/day and 10 vendor trips/day
Paving:	18 worker trips/day
Architectural Coating:	20 worker trips/day and 3 vendor trips/day[e]

Input Parameters Type	Specification
Architectural Coating:	
Coated Interior Area:	8,250 ft^2
Coated Exterior Area:	2,750 ft^2
Construction Mitigation:	
Utilize Tier 2 or newer for off-road construction equipment. Water disturbed area three times per day to minimize fugitive dust (PM10 and PM2.5) emissions.	
Note: a) The total building size of 18,000 ft^2 includes all structures will be constructed on the facility site. One office and one warehouse building are the only occupied buildings, which total size is less than 2,000 ft^2. b) The construction schedule in CalEEMod was based on construction starting date of August 1st, 2018. Start dates later than 2018 will be expected to have lower emissions that the levels included in the analysis, due to equipment fleet modernization. c) Although CalEEMod calculated fugitive emissions from the export of soil offsite to the neighboring landfill, the export of soil and resulting emissions displace what would otherwise result from the import of landfill cover from offsite sources. d) The worker vehicles reflect a mix of light duty autos and light duty trucks. The vendor vehicles reflect a mix of medium and heavy-duty trucks. The hauling vehicles include heavy duty trucks. e) The quantity of 3 large truck and 20 cars during architectural coating phase include vehicle trips due to commissioning activity of the electrical generating equipment.	

The proposed Project will also include construction of natural gas and water pipelines. The natural gas pipeline will connect the facility to the existing SoCalGas pipeline system located at the eastern end of Scholl Canyon Drive. The water line will be near the two fire hydrants located at the western end of Scholl Canyon Golf and Tennis Club. The air quality impacts of these pipelines are negligible because of the following reasons:

a) Pipelines will be located above ground except for at road crossings; therefore, minimal excavation activity will be expected.

b) Pipelines are short in distance (3,500 feet for natural gas pipeline and 5,280 feet for water pipeline).

c) No new access roads will be built for pipeline construction.

d) Disturbance due to moving vehicles will be minimal because of slow construction vehicle speeds and surrounding vegetation.

No transmission lines will be constructed for the proposed Project. Existing transmission lines will be utilized to connect the electric generating equipment to the local grid. CalEEMod model outputs are included in Appendix B.1.

When the Mitigated Negative Declaration (MND) report was being prepared in 2017, the majority of landfill gas produced by the SCLF was piped and combusted in existing boilers at GWP's) Grayson Power Plant. Therefore, the air quality impact during the construction phase prepared for the MND was analyzed based on the net emission increase from emissions due to earthmoving activity and new landfill gas combustion in the landfill flare system and baseline emissions from landfill gas combustion in Grayson Power Plant boilers.

However, in April 2018, GWP discontinued landfill gas combustion in the boilers at the Grayson Power Plant. All landfill gas produced by the landfill is now being combusted in the existing flare system at the SCLF, and that flaring system is part of the baseline for this Project. Since there would be no changes to how the landfill gas is being generated, the air quality impacts during the construction phase of the proposed Project are now limited to emissions due to earthmoving activity and supporting construction operations.

Table 10 compares the net emissions of the proposed Project during construction to the mass daily significance thresholds. The model output shown in Table 10 reflects a project that would have been initiated in 2018 and serves as a conservative assessment of construction impacts. A project that is initiated in 2020 or later would be expected to have lower emissions as existing truck and construction equipment engines are replaced with new technology.

Table 10 Overall Air Quality Impact Due to the Construction of the proposed Project

Pollutant	CalEEMod Output (Earthmoving Activity) (lbs./day)	SCAQMD Mass Daily Significance Thresholds for Construction Emissions (lbs./day)	Exceed the Threshold (yes/no)
NO_X	41	100	NO
CO	33	550	NO
VOC	4.5	75	NO
PM10	8.2	150	NO
PM2.5	4.9	55	NO
SO_X	0.05	150	NO

Data Source: The emissions estimator model output using CalEEMod version 2016.3.1.

As listed in Table 1 of Rule 403, the following control measures will be implemented to minimize fugitive dust emissions during construction for the proposed Project:

- Apply sufficient amount of water to prevent the generation of visible dust plumes during demolition and earth-moving activities.
- Stabilize material while loading, transporting, and unloading to reduce fugitive emissions.
- Establish traffic and parking areas for construction activities by using road barriers.

Based on the required Rule 403 actions taken to minimize fugitive emissions during construction activity and calculated emissions summarized in **Table 10**, the overall air quality impact of construction activity of the proposed Project would be below the applicable SCAQMD regional mass emissions thresholds of significance. The Project would also be in compliance with applicable SCAQMD rules and regulations. Construction of the proposed Project would not conflict with or obstruct implementation of the air quality plan and potential impact would be less than significant.

Mitigation Measures

No mitigation measures are required.

4.2.4.2 Operational Impacts

Operational emissions will come primarily from stationary equipment, but some indirect emissions such as those from the transportation of employees, visitors, contractors and goods will result from the proposed Project. The Project is expected to result in a similar number of vehicle trips as those which already occur for existing facility operation and maintenance.

Emissions from stationary equipment were calculated based upon SCAQMD BACT standards, manufacturer guaranteed emission factors, laboratory and source test data, and default emission factors provided by USEPA or ARB. The maximum daily emissions were then compared to SCAQMD mass daily significance thresholds.

4.2.4.3 Operation Impacts due to Facility Occupancy

The emissions produced by the occupants of the facility were estimated using the CalEEMod version 2016.3.1. CalEEMod calculates indirect operational emissions caused by the occupancy of the facility, which include electricity and water consumption, as well as on-road mobile emissions. A total of six employees will be responsible for operations and routine maintenance of the facility and will generate on-road commute emissions in addition to the emissions from material deliveries to the site. **Table 11** summarizes the daily emissions caused by these six employees in operating the facility. CalEEMod model outputs are included in Appendix B.1.

Table 11 Criteria Pollutant Emission Summary – Facility Occupancy

Pollutant	Area Usage[a] (lbs./day)	Energy Usage (lbs./day)	Mobile Usage (lbs./day)	Total Emissions (lbs./day)
NO_X	0.00001	0.0268	0.0164	0.043
CO	0.00057	0.0225	0.0451	0.068
VOC	0.1229	0.0026	0.0031	0.128
PM10	0	0.0020	0.0126	0.015
PM2.5	0	0.0020	0.0035	0.005
SO_X	0	0.0002	0.0002	0.0003

Notes:
a) Area usages include architectural coating, consumer products, and landscaping.

Data Source: The emissions estimator model output using CalEEMod version 2016.3.1.

The daily indirect emissions resulting from employees operating the facility were added to plant operations emissions. However, as shown in **Table 11**, these daily emissions were estimated to be less than one pound and the contribution to the overall operational emissions are expected to be negligible.

4.2.4.4 Operation Impacts due to Stationary Equipment

The Project includes construction and operation of an approximately 12-megawatt (MW) power generation facility that would utilize LFG as fuel to generate renewable energy (electricity). The engines will create emissions due to the combustion of landfill gas.

Based on the fact that the flare will incinerate landfill gas and it will be utilized as needed, its emissions will be analyzed as part of the emissions from the existing flares. The existing flares will operate intermittently as backup devices to incinerate excess landfill gas being produced that is not utilized by the electrical generating units, should one or more generating units be temporarily inoperable.

Because SCLF LFG quality may fluctuate, NG may be utilized to ensure combustion and engine operating efficiency. The augmentation with natural gas is exclusively to maintain the heating value of fuel to ensure combustion and efficient engine operation. The proposed facility will not use natural gas to increase engine utilization. SCAQMD Rule 1110.2 restricts NG combustion to no more than 10% of the fuel stream, based on annual heat input, and the limit on natural gas augmentation will be specified in the SCAQMD operating permit for the Project. Since NG is a cleaner fuel than landfill gas, it is more conservative to analyze the air quality impacts of the proposed engines based on operating emissions using 100 percent landfill gas as the worst-case scenario. When the landfill gas production at the SCLF declines, engine utilization will also decline because SCAQMD regulations and permit conditions will not allow ongoing operation in the absence of landfill gas

Reciprocating Internal Combustion Engines

The City is proposing to use four reciprocating internal combustion engines (RICE) General Electric Jenbacher Model J 620 GS-16 engines for the Project. Each engine has the ability to produce 3,018 kilowatts (KW) of power at 39.5 percent efficiency under International Organization of Standardization (ISO) conditions. At 100 percent operating load, each engine is estimated to be able to combust 1,383 standard cubic feet per minute (scfm) of LFG. With the LFG production of 5,000 scfm, small amounts of natural gas will augment the landfill gas to increase intake fuel heating value which will allow all four engines be operated at 100 percent capacity during brief periods when peak utilization may be needed. Although it is expected that engine utilization will decline as LFG production declines, 100 percent annual utilization of LFG may occur in the first year of operation; therefore, it was used to determine the significance of air quality impacts.

The following emission factors were used to estimate the criteria pollutant emissions from the engines:

- 11 ppmv at 15 percent O_2 for NO_X and 30 ppmv at 15 percent O_2 emission factors were used based on the required emission limits pursuant to SCAQMD Rule 1110.2.
- The proposed engines will be equipped with oxidation catalysts to reduce the CO emissions. Based on the manufacturer data, uncontrolled CO emission of the engine is 250 ppmv at 15 percent O_2. While CO emission reductions of at least 90 percent can be expected due to the use of an oxidization catalyst, the emissions inventory and air quality analysis assumes a much lower control efficiency and a controlled CO concentration of 130 ppmv at 15 percent O_2.

- The engine manufacturer PM10/2.5 emission rate of 0.066 grams per brake horsepower hour (g/bhp-hr), based upon SCAQMD BACT guidance.
- The SO_X emission factor was estimated based on 60 ppmv of sulfur content of landfill gas measured in H_2S as determined by SCAQMD as BACT.

The proposed engines will be equipped with SCR combined with oxidation catalysts to meet SCAQMD emission standards. However, uncontrolled emissions can occur during startup, commission, and maintenance activities. To account for the uncontrolled emission rates and estimate maximum daily emissions, the following daily operating schedule is assumed:

1. Three engines run 22 hours in normal operation and 2 hours in startup/shutdown mode.
2. One engine runs 12 hours in normal operation, 10 hours in maintenance, and 2 hours for startup/shutdown.

It is unlikely to have more than one engine in maintenance in the 24-hour period. Additionally, this type of operation will likely be limited to commissioning of the proposed Project to ensure the engines are operating properly prior to the loading of emission control catalyst.

The emissions from the LFG combustion in the flare system were used for the baseline emissions during operational phase. The baseline emissions reflected the flare emissions reported in SCAQMD Annual Emission Reporting Program in 2018. This emission inventory is included in Appendix B.2.

Table 12 summarizes the net emissions of the proposed Project based on the daily maximum engine emissions, the daily average flare emissions as the baseline emissions, and the quantity of Priority Reserve credits to offset the emission increases. **Table 13** compares the net emissions of the proposed Project to the SCAQMD screening level mass-emissions significance thresholds. The emission Inventory for the proposed RICE is also included in Appendix B.2.

To comply with SCAQMD Regulation XIII, Priority Reserve credits will be allocated to offset the emission increases of the proposed Project. After consideration of reduced emissions due to the reduced operation of the existing flares and the application of Priority Reserve credits through SCAQMD Rule 1309.1, net emissions of NO_X, VOC, PM10, PM2.5 and SO_X will be below SCAQMD daily mass emission significance thresholds. SCAQMD does not provide Priority Reserve offsets for CO emissions. As such, daily emissions of CO are above the SCAQMD daily screening level mass emission significance thresholds. A more complex significance determination is made to demonstrate that emissions of CO are also below refined significance thresholds that are based upon ambient pollutant concentrations.

Table 12 Overall Air Quality Impact of the proposed Project in the Operational Phase

Pollutant	Total proposed Project (Engines Daily Max. Emissions (lbs./day)	Less: Existing Baseline Daily Landfill Gas Combustion Emissions (lbs./day)	Offset Allocations from the SCAQMD Priority Reserve (lbs./day)	Remaining Scholl Canyon Power Generating Facility Emissions (lbs./day)
NO_X	165	90	75	0
CO	919	42	0	877
VOC	114	7	107	0
PM10	58	62	0	[4]
PM2.5	58	62	0	[4]
SO_X	81	46	35	0

Table 13 Comparison of Overall Operation Emissions with Significance Thresholds

Pollutant	Net Operation Emissions (lbs./day)	SCAQMD Mass Daily Significance Thresholds for Operation Emissions (lbs./day)	Exceed the Threshold (yes/no)
NO_X	0	55	NO
CO	877	550	YES
VOC	0	55	NO
PM10	[4]	150	NO
PM2.5	[4]	55	NO
SO_X	0	150	NO

Without the Priority Reserve credits, NO_X, CO, and VOC emissions of the proposed Project would exceed the significance thresholds. Air dispersion modeling was conducted to analyze further impact of pollutants emissions. Air dispersion modeling was not conducted for VOC since there is no State or Federal ambient air quality standards. The data inputs for the emission modeling are provided in **Table 14**.

Table 14 American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) Input Parameters

Input Parameters Type	Specification
Engines Exhaust Information:	
Stack Height:	40 ft.
Stack Diameter:	2 ft.
Stack Temperature:	797 °F
Exhaust Flow (Wet):	481,020 scfh

Table 15 summarizes the ambient air quality impacts from operating the proposed engines. As discussed in Section 4.2.1.2, the background concentration is based upon the highest values recorded for the years 2014 through 2018. Model results demonstrate that the proposed Project will not cause an exceedance of NO_2, CO, or PM2.5 ambient air quality standards. PM10 and PM2.5 background ambient concentrations already exceed federal or state standards, but the increase in concentrations resulting from the proposed Project are below allowable thresholds established by SCAQMD. Detailed model input and output information is provided in Appendix B.3.

Table 15 AERMOD Model Output

Pollutant	Averaging Period	Project Impact	Background[a]	New Ambient	Limiting Standard	Type of Standard
NO_2[b]	1-HR	0.030 ppm	0.075 ppm	0.105 ppm	0.18 ppm	CAAQS
NO_2[b]	1-HR (98^{th} %)	0.014 ppm	0.060 ppm	0.074 ppm	0.10 ppm	NAAQS
NO2[c]	Annual	0.00015 ppm	0.017 ppm	0.017 ppm	0.03 ppm	CAAQS
CO	1-HR	0.0145 ppm	3.0 ppm	3.01 ppm	20 ppm	CAAQS
CO	8-HR	0.0344 ppm	1.8 ppm	1.83 ppm	9 ppm	CAAQS
PM10	24-HR	1.07 ug/m^3	96 ug/m^3	97.07 ug/m^3	Allowable increase of 2.5 ug/m^3	CAAQS/SCAQMD Allowable Increase
PM10[d]	24-HR (6^{th} highest over 5 years)	0.065 ug/m^3	96 ug/m^3	96.065 ug/m^3	150 ug/m^3	NAAQS
PM10	Annual	0.118 ug/m^3	35.4 ug/m^3	35.52 ug/m^3	Allowable increase of 1.0 ug/m^3	CAAQS/SCAQMD Allowable Increase
PM2.5	24-HR	1.07 ug/m^3	59.9 ug/m^3	60.97 ug/m^3	Allowable increase of 2.5 ug/m^3	CAAQS/SCAQMD Allowable Increase
PM2.5	24-HR (8^{th} highest)	0.35 ug/m^3	38.0 ug/m^3	38.35 ug/m^3	35 ug/m^3 Below SIL of 1.2 ug/m^3	NAAQS EPA Significant Impact Level (SIL)
PM2.5[e]	Annual	0.118 ug/m^3	12.38 ug/m^3	12.50 ug/m^3	Below SIL of 0.3 ug/m^3 Allowable increase of 1.0 ug/m^3	EPA Significant Impact Level (SIL) CAAQS/SCAQMD Allowable Increase
SO_2	1-HR	0.0026 ppm	0.018 ppm	0.021 ppm	0.25 ppm	CAAQS
SO_2[f]	1-HR (99^{th} %)	0.0014 ppm	0.0094 ppm	0.0108 ppm	0.075 ppm	NAAQS
SO_2	24-HR	0.0006 ppm	0.002 ppm	0.0026 ppm	0.04 ppm	CAAQS

Notes:
a) The background values are based on the highest concentrations monitored during 2014 through 2018.

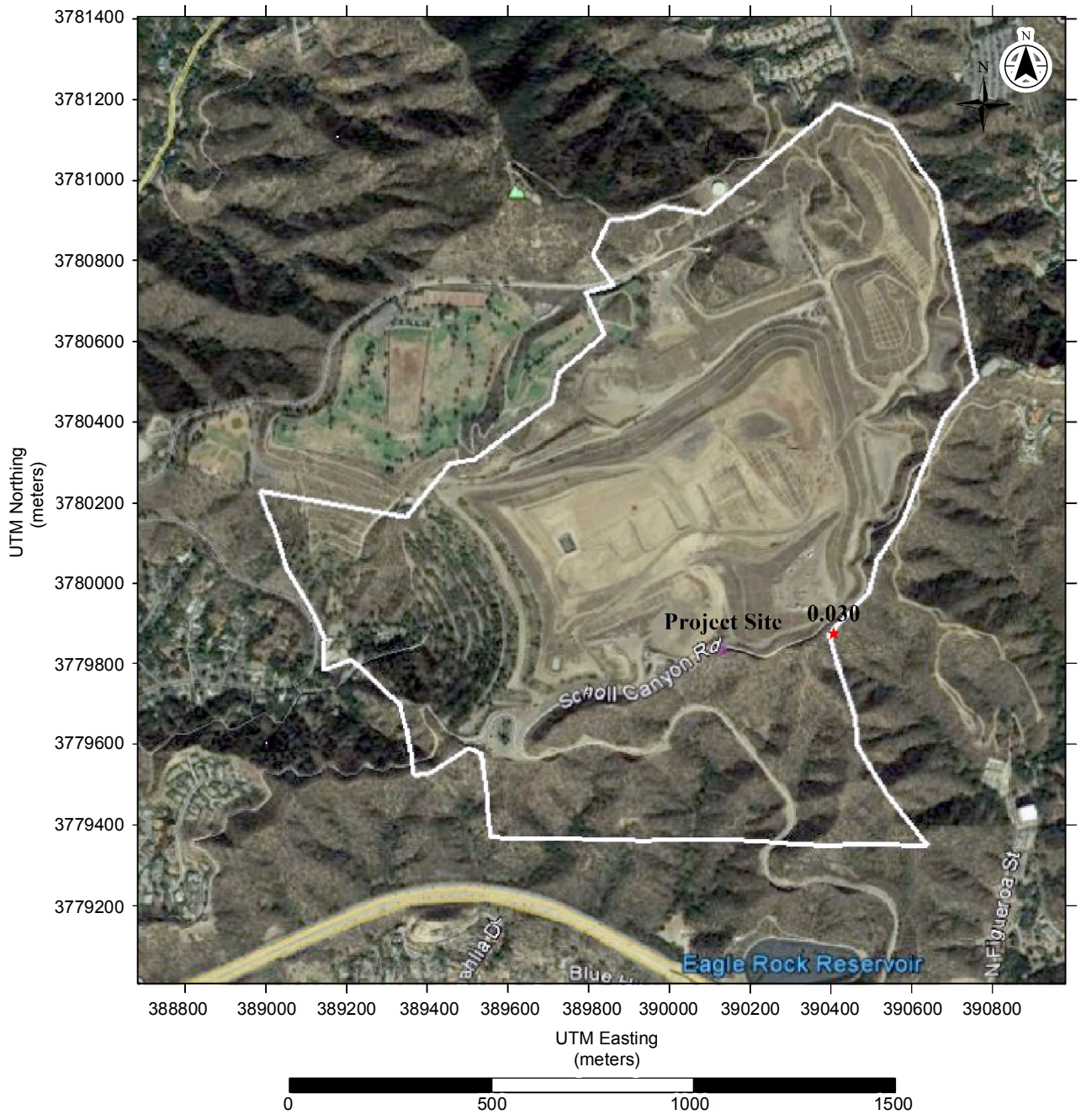
Pollutant	Averaging Period	Project Impact	Background[a]	New Ambient	Limiting Standard	Type of Standard
b) The NO_2 1-hour modeling was refined using the AERMOD Ambient Ratio Method Version 2 (ARM2) option.						
c) The NO_2 annual modeling was refined using the AERMOD ARM option, which assumed an 80% conversion factor of NO_X to NO_2.						
d) The PM10 24-hour modeled values were based on the maximum 6th highest concentration over 5 years period.						
e) The PM2.5 24-hour modeled values were based on the 8th highest concentration averaged over 5 years period with the background concentrations of 98th percentile of 24-hour data averaged over 5 years period.						
f) The SO_2 1-hour modeled values were based on the 4th highest concentration averaged over 5 years period with the background concentrations of 99th percentile of 1-hour data averaged over 5 years period.						
g) There are receptors surrounding the facility at lower and higher elevations than the emission sources. The model was run on non-default option (flat terrain) on all receptors at lower elevations; and a default option (complex terrain) was selected to on receptors above the emission sources base elevation. The project impact values shown are the highest values from both model runs.						

Data Source: The output of air dispersion model conducted using Providence BEEST AERMOD software (version 16216r).

Figures 4.2-1 A through **L** show the maximum concentration readings for criteria pollutants outside the landfill property boundary.

This page has been intentionally left blank.

C:\Users\jtrook\Desktop\205712300\mxd\20170721\Fig4.3_2A_AERMOD_1st_highest_1hr_NO2_20170723.mxd Revised: 2017-07-23 By: jtrook



Modeling performed by Montrose Air Quality Services

Stantec

Project Location
Glendale, CA

Project No.: 205712300
Prepared by JT on 2017-07-21
Technical Review by CH on 2017-07-21

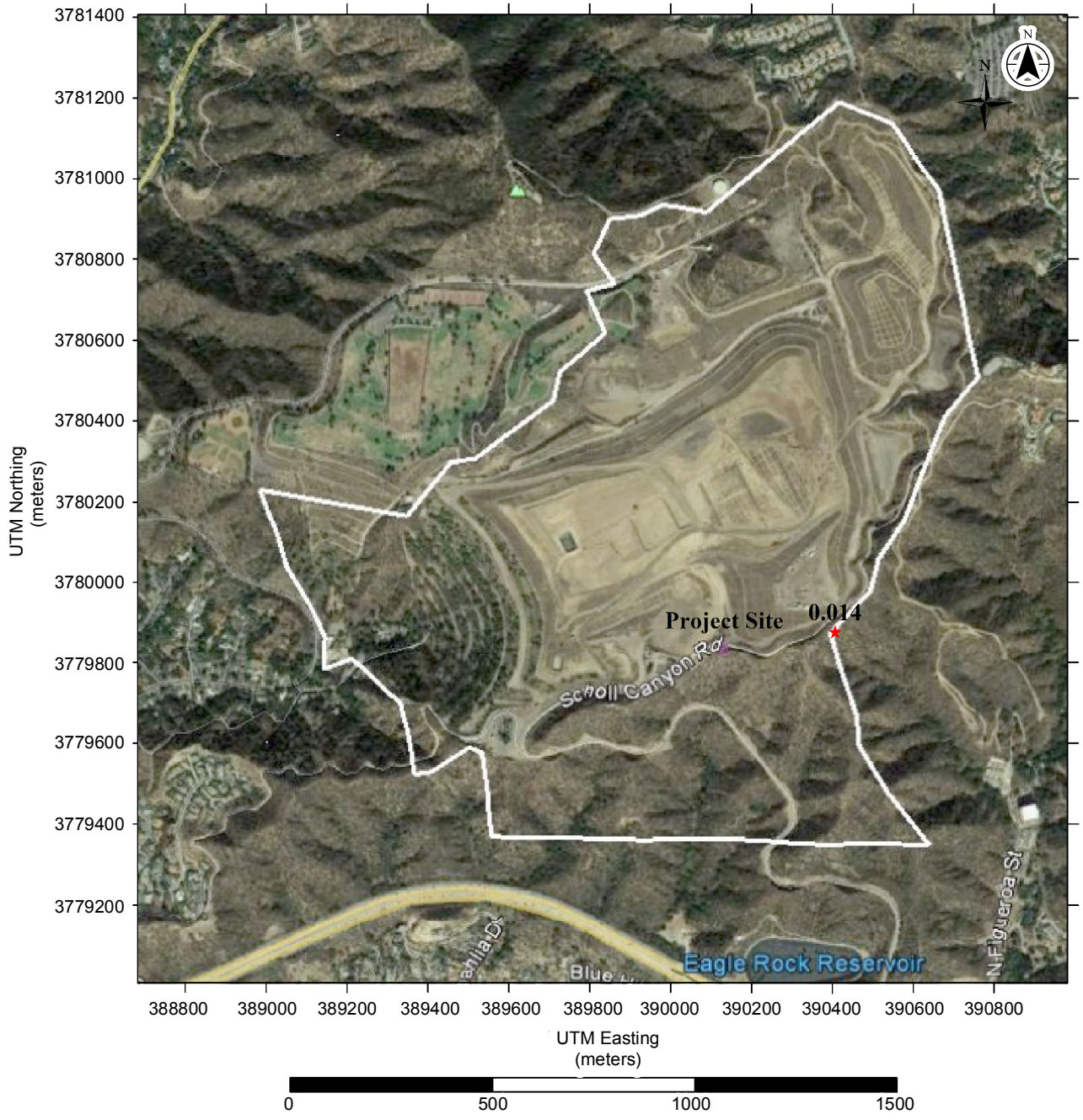
Client/Project
City of Glendale Water and Power
Biogas Renewable Generation Project
Environmental Impact Report

Figure No.
4.2-1A

Title
AERMOD Output for 1st highest 1-hourly NO_2 Concentrations (ppm)

This page has been intentionally left blank.

C:\Users\jtrook\Desktop\205712300\mxd\20170721\Fig4.3_28_AERMOD_8th_highest_1hr_NO2_20170723.mxd Revised: 2017-07-23 By: jtrook



Modeling performed by Montrose Air Quality Services

Stantec

Project Location
Glendale, CA

Project No.: 205712300
Prepared by JT on 2017-07-21
Technical Review by CH on 2017-07-21

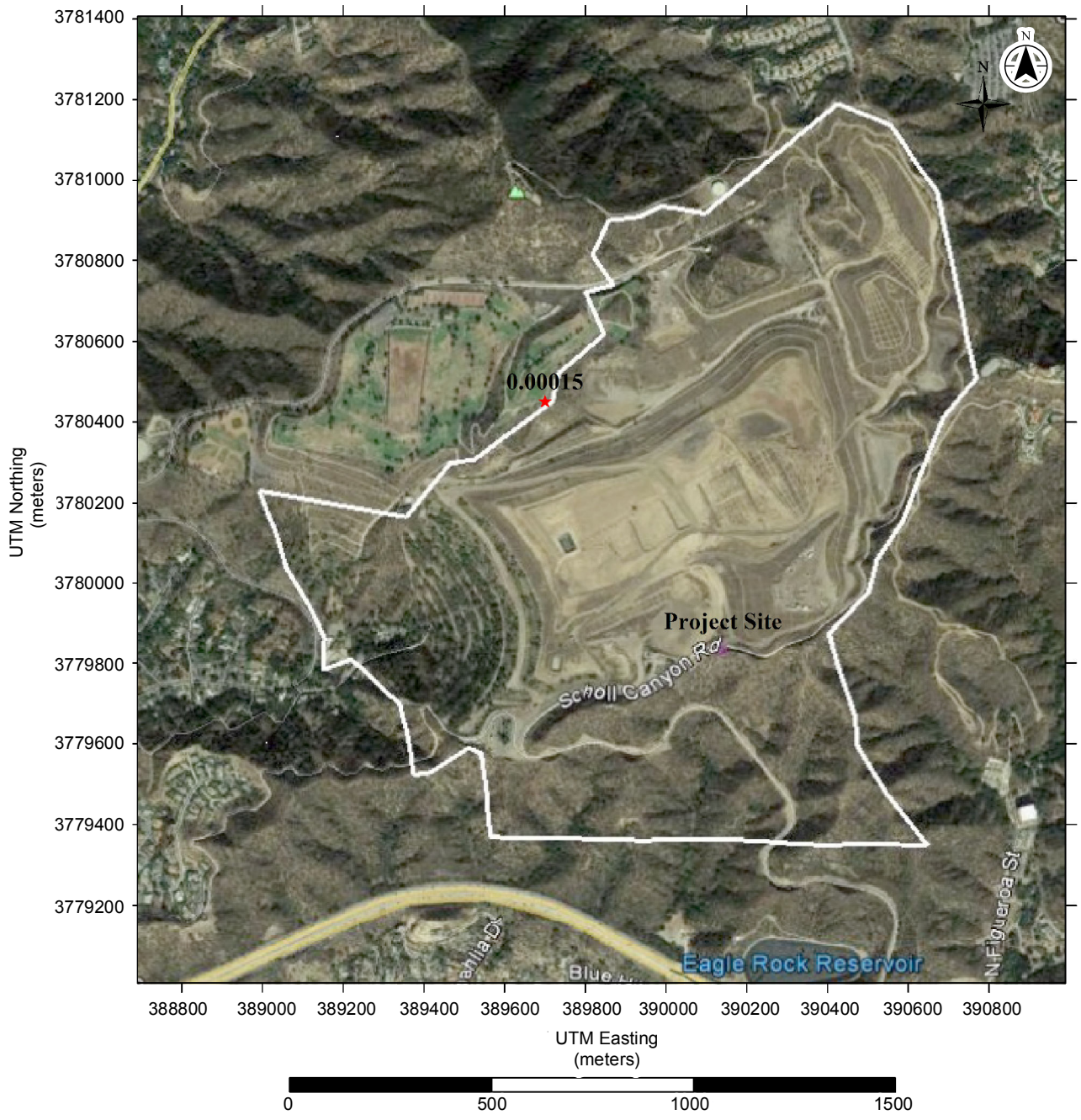
Client/Project
City of Glendale Water and Power
Biogas Renewable Generation Project
Environmental Impact Report

Figure No.
4.2-1B

Title
AERMOD Output for 8th highest 1-hourly NO_2 Concentrations (ppm)

This page has been intentionally left blank.

C:\Users\jtrook\Desktop\205712300\mxd\20170721\Fig3_3_2C_AERMOD_Annual_NO2_20170723.mxd Revised: 2017-07-23 By: jtrook



Modeling performed by Montrose Air Quality Services

Stantec

Project Location
Glendale, CA

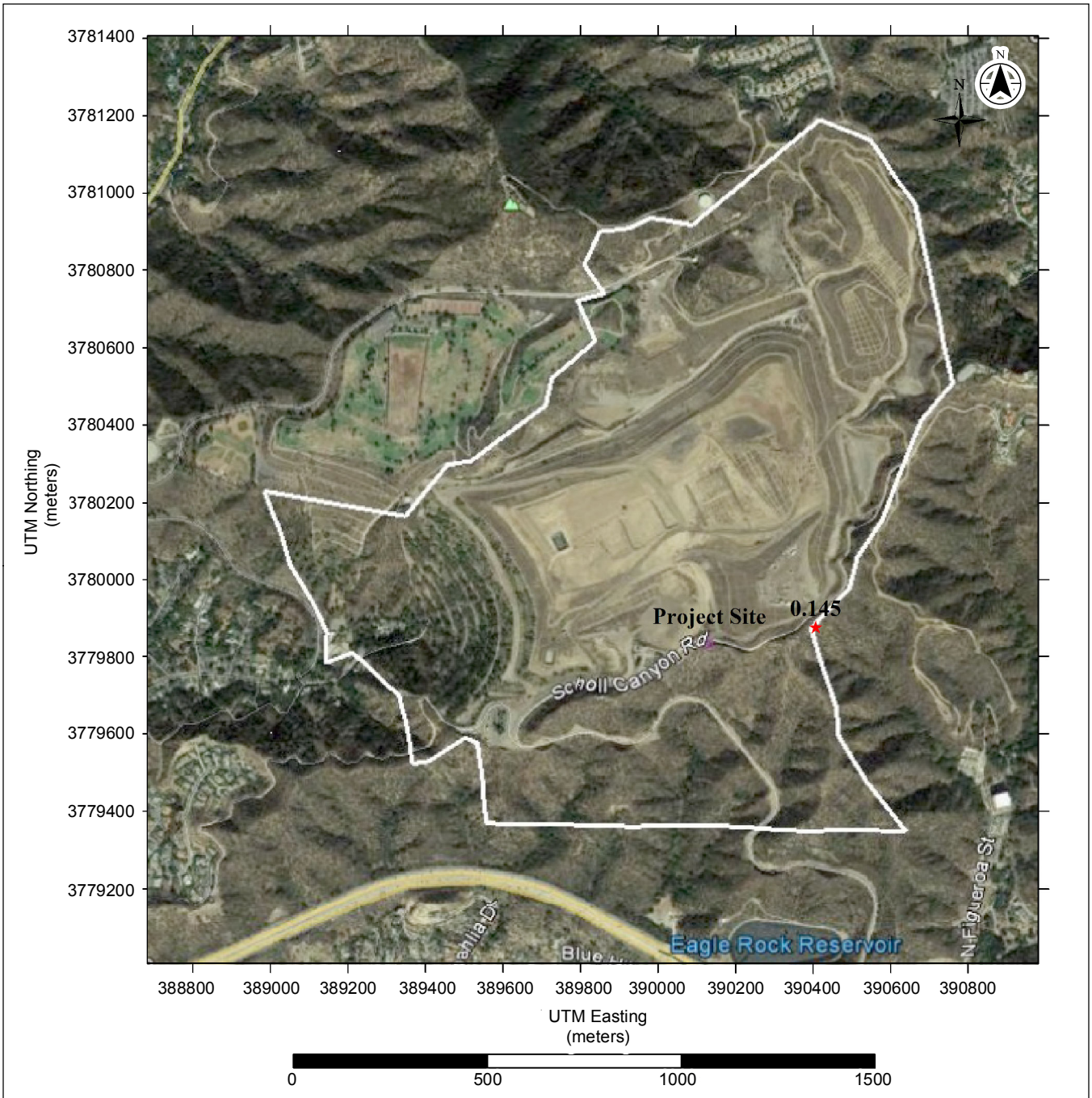
Project No.: 205712300
Prepared by JT on 2017-07-21
Technical Review by CH on 2017-07-21

Client/Project
City of Glendale Water and Power
Biogas Renewable Generation Project
Environmental Impact Report

Figure No.
4.2-1C

Title
AERMOD Output for Annual NO_2 Concentrations (ppm)

This page has been intentionally left blank.



Modeling performed by Montrose Air Quality Services

Stantec

Project Location
Glendale, CA

Project No.: 2057123300
Prepared by JT on 2017-07-21
Technical Review by CH on 2017-07-21

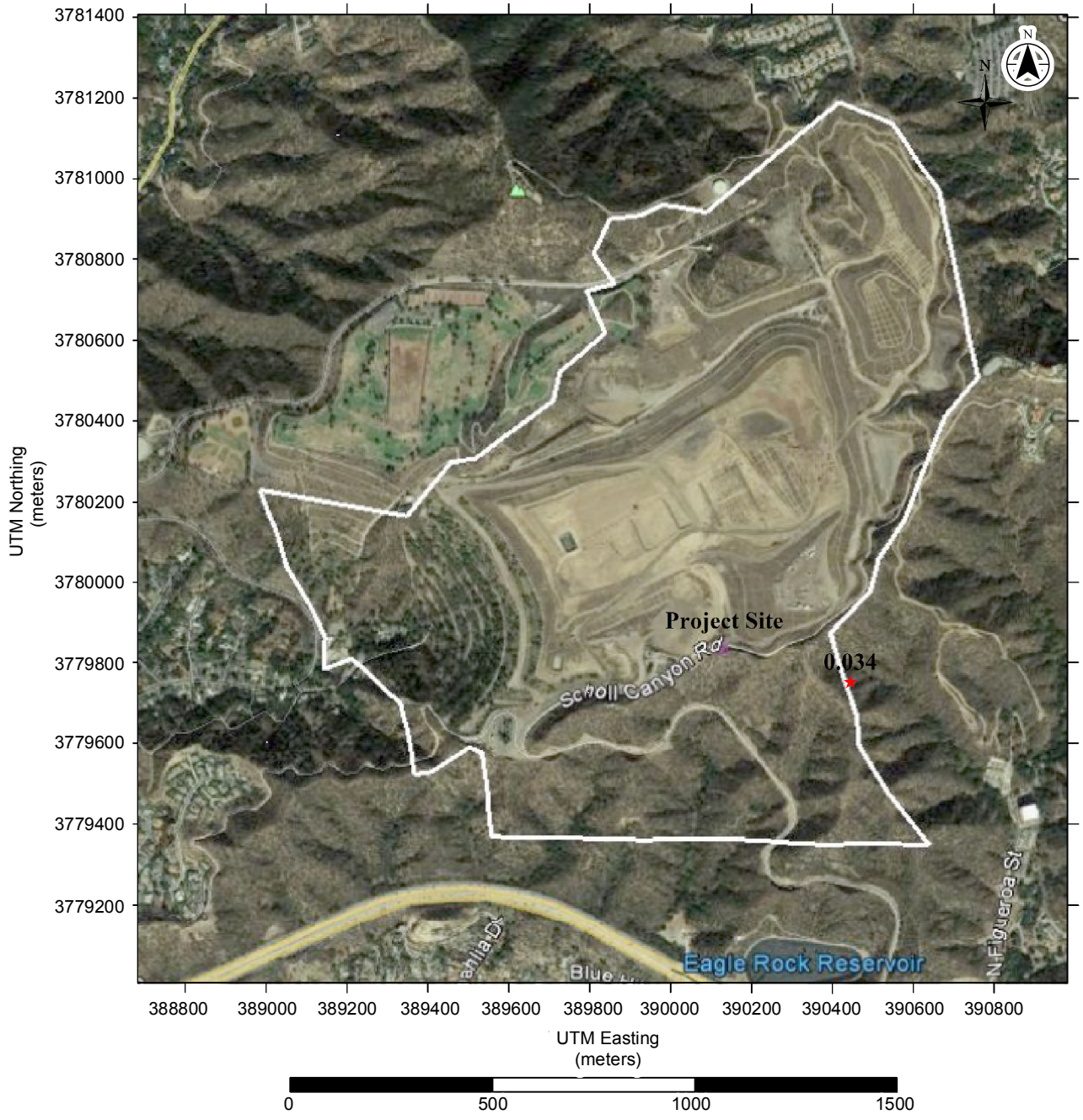
Client/Project
City of Glendale Water and Power
Biogas Renewable Generation Project
Environmental Impact Report

Figure No.
4.2-1D

Title
AERMOD Output for 1st highest 1-hourly CO Concentrations (ppm)

This page has been intentionally left blank.

C:\Users\jtrook\Desktop\2057123300.mxd\20170721\Fig3_3_2E_AERMOD_1st_highest_8hr_CO_20170723.mxd Revised: 2017-07-23 By: jtrook



Modeling performed by Montrose Air Quality Services

Stantec

Project Location
Glendale, CA

Project No.: 2057123300
Prepared by JT on 2017-07-21
Technical Review by CH on 2017-07-21

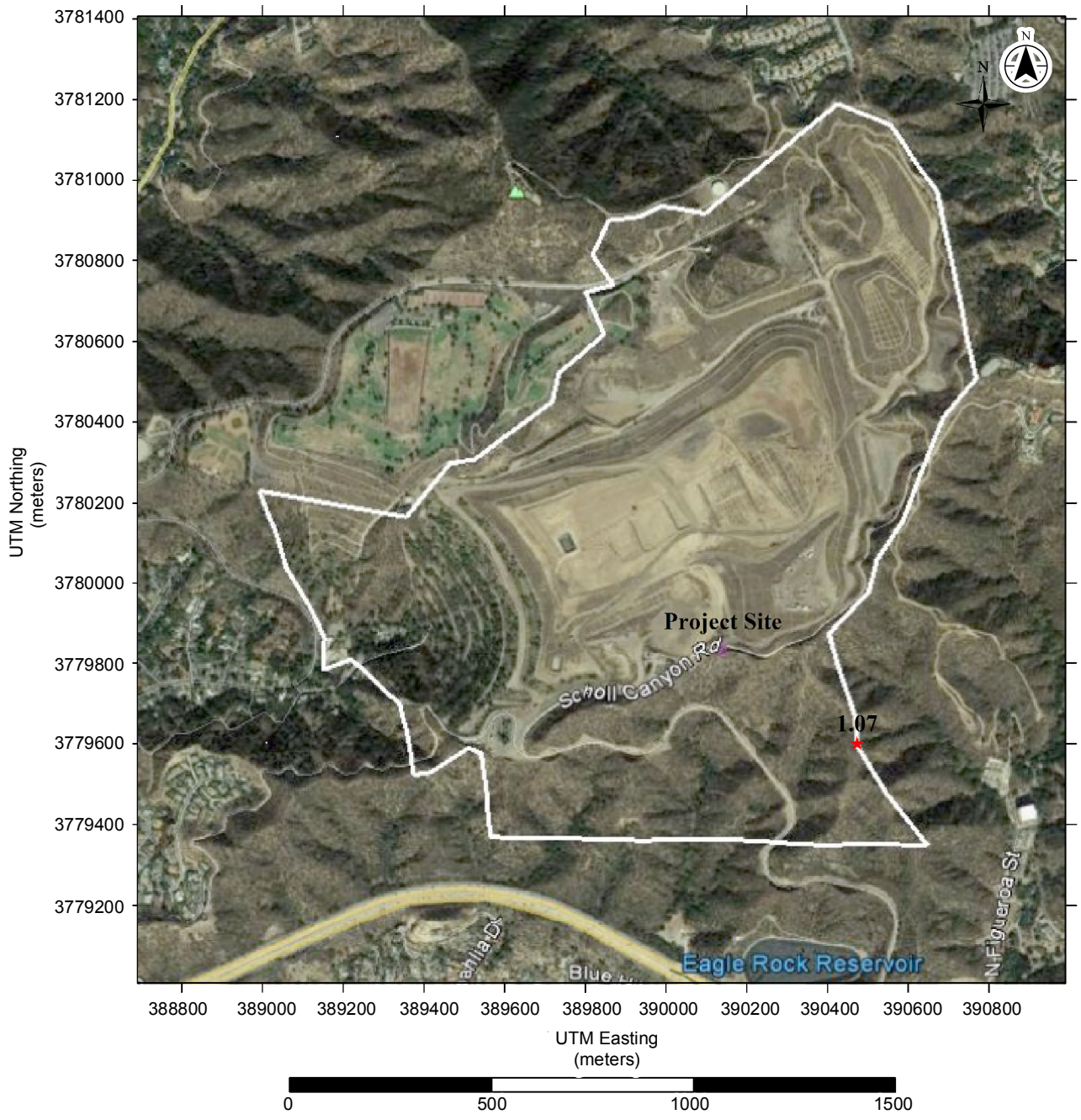
Client/Project
City of Glendale Water and Power
Biogas Renewable Generation Project
Environmental Impact Report

Figure No.
4.2-1E

Title
AERMOD Output for 1st highest 8-hourly CO Concentrations (ppm)

This page has been intentionally left blank.

C:\Users\jhrook\Desktop\205712330\mxd\20170721\Fig3_3F_AERMOD_1st_highest_24hr_PM10_25_20170723.mxd Revised: 2017-07-23 By: jhrook



Modeling performed by Montrose Air Quality Services

Stantec

Project Location
Glendale, CA

Project No.: 205712330
Prepared by JT on 2017-07-21
Technical Review by CH on 2017-07-21

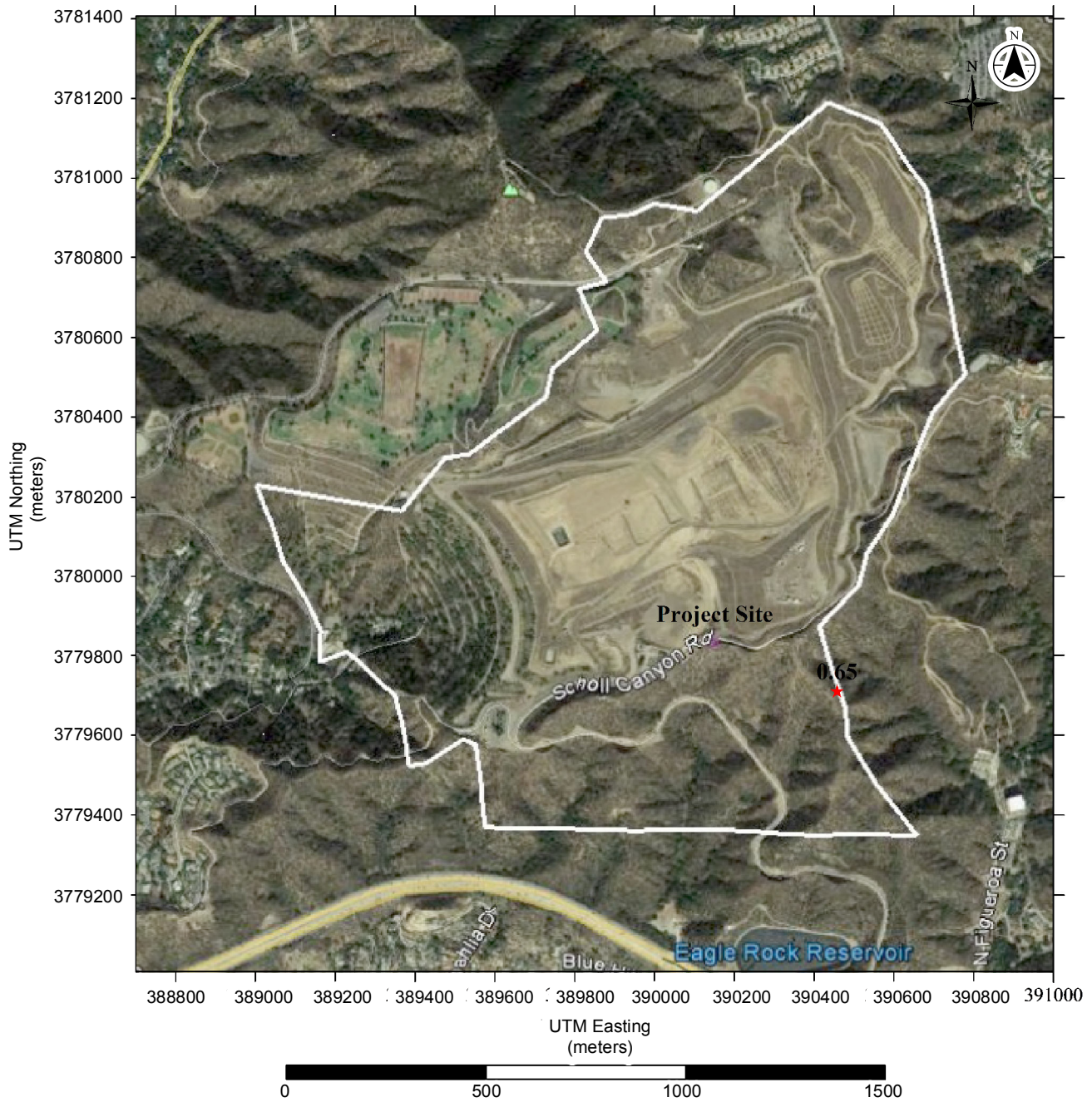
Client/Project
City of Glendale Water and Power
Biogas Renewable Generation Project
Environmental Impact Report

Figure No.
4.2-1F

Title
AERMOD Output for 1st highest 24-hour PM10/2.5 Concentrations (ug/m³)

This page has been intentionally left blank.

C:\Users\jtrook\Desktop\2057123300\mxd\20170721\Fig3_3_2G_AERMOD_6th_highest_24hr_PM10_25_20170723.mxd Revised: 2017-07-23 By: jtrook



Modeling performed by Montrose Air Quality Services

Stantec

Project Location
Glendale, CA

Project No.: 2057123300
Prepared by JT on 2017-07-21
Technical Review by CH on 2017-07-21

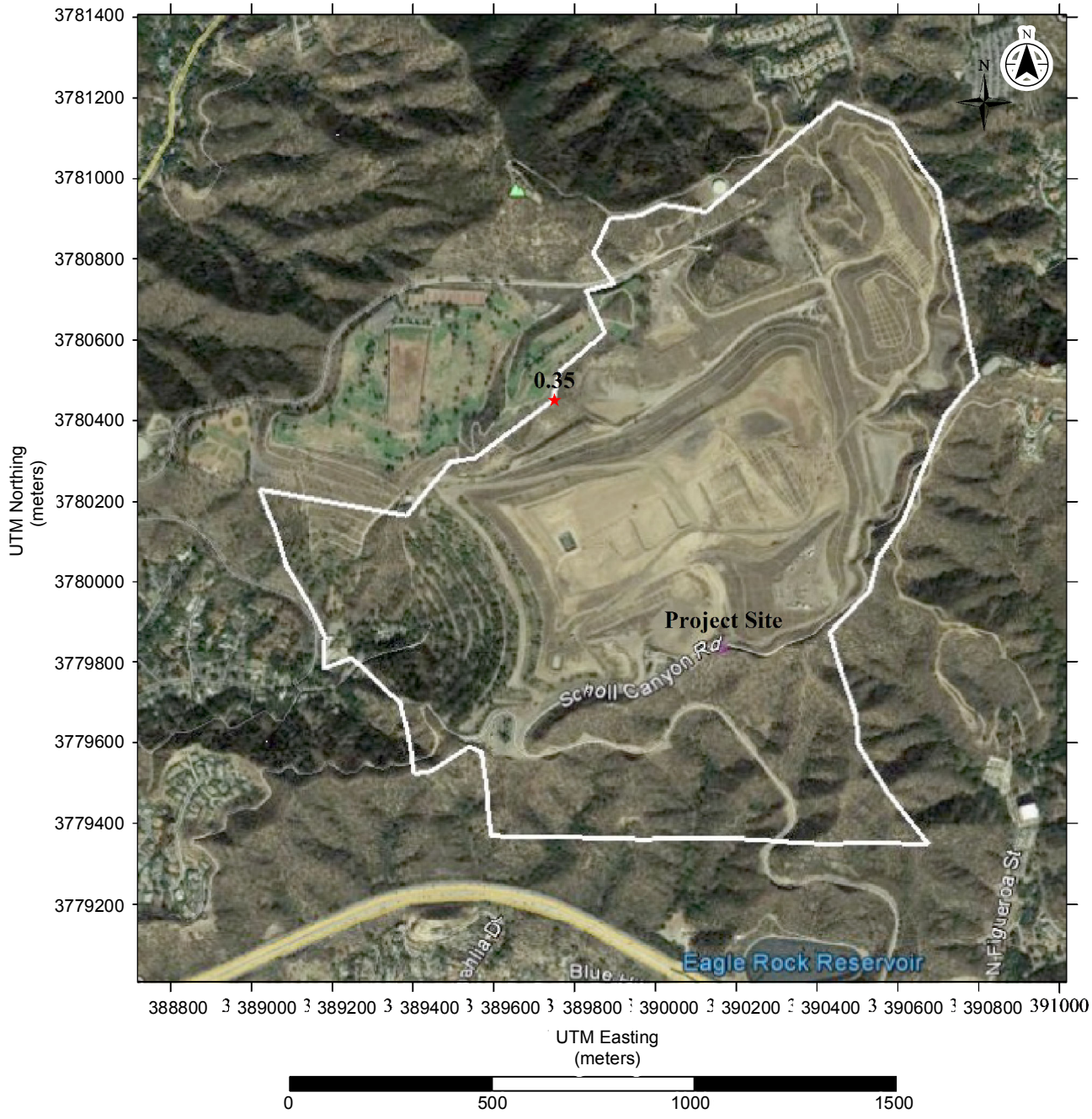
Client/Project
City of Glendale Water and Power
Biogas Renewable Generation Project
Environmental Impact Report

Figure No.
4.2-1G

Title
AERMOD Output for 6th highest 24-hour PM10 Concentrations (ug/m³)

This page has been intentionally left blank.

C:\Users\jtrook\Desktop\205712300\mxd\20170721\Fig3_3.2H_AERMOD_8th_highest_24hr_PM10_25_20170723.mxd Revised: 2017-07-23 By: jtrook



Modeling performed by Montrose Air Quality Services

Stantec

Project Location
Glendale, CA

Project No.: 205712300
Prepared by JT on 2017-07-21
Technical Review by CH on 2017-07-21

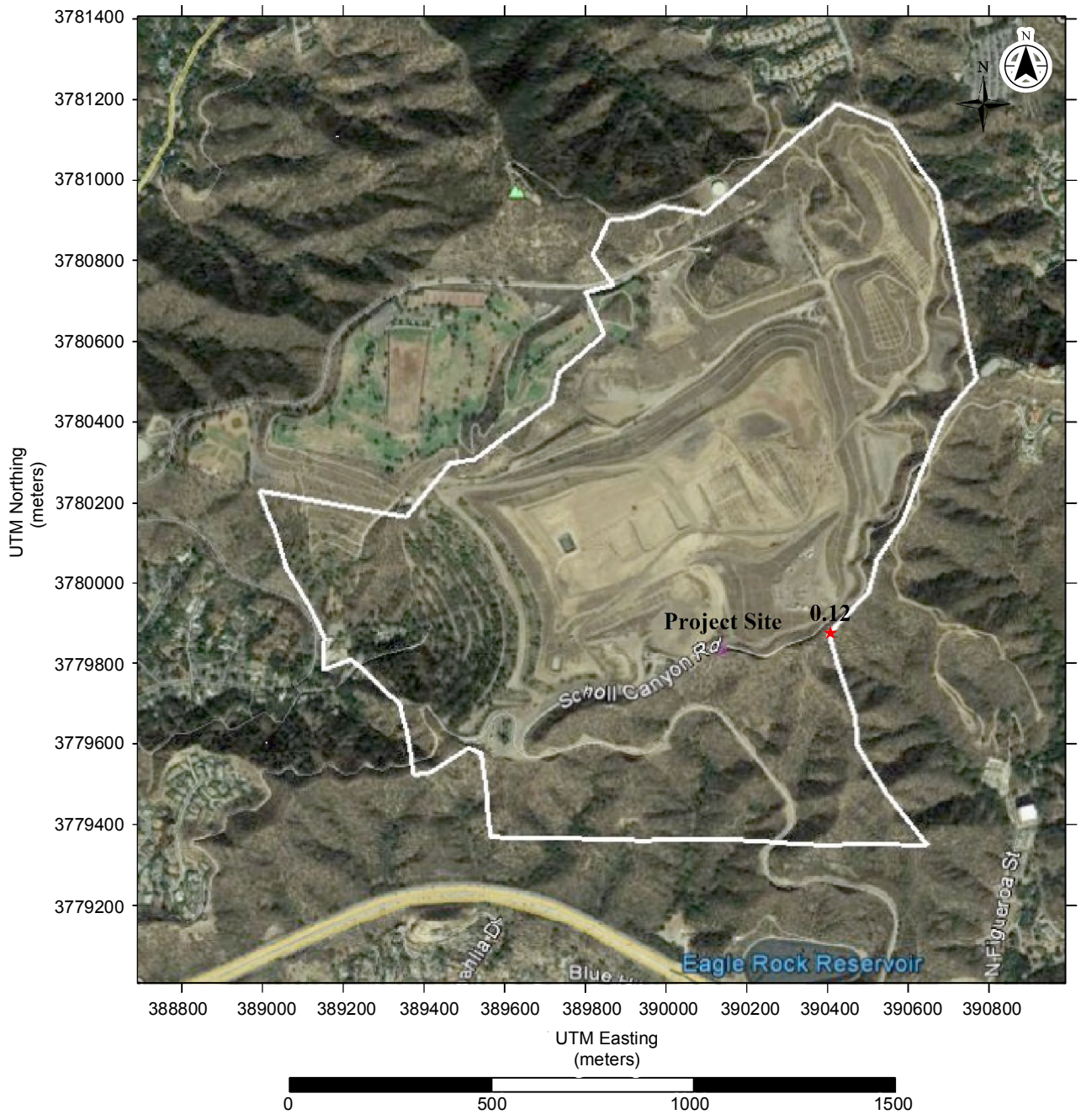
Client/Project
City of Glendale Water and Power
Biogas Renewable Generation Project
Environmental Impact Report

Figure No.
4.2-1H

Title
AERMOD Output for 8th highest 24-hour PM2.5 Concentrations (ug/m³)

This page has been intentionally left blank.

C:\Users\jtrook\Desktop\2057123300\mxd\20170721\Fig3_3_2L_AERMOD_Annual_PM10_25_20170723.mxd Revised: 2017-07-23 By: jtrook



Modeling performed by Montrose Air Quality Services

Stantec

Project Location
Glendale, CA

Project No.: 2057123300
Prepared by JT on 2017-07-21
Technical Review by CH on 2017-07-21

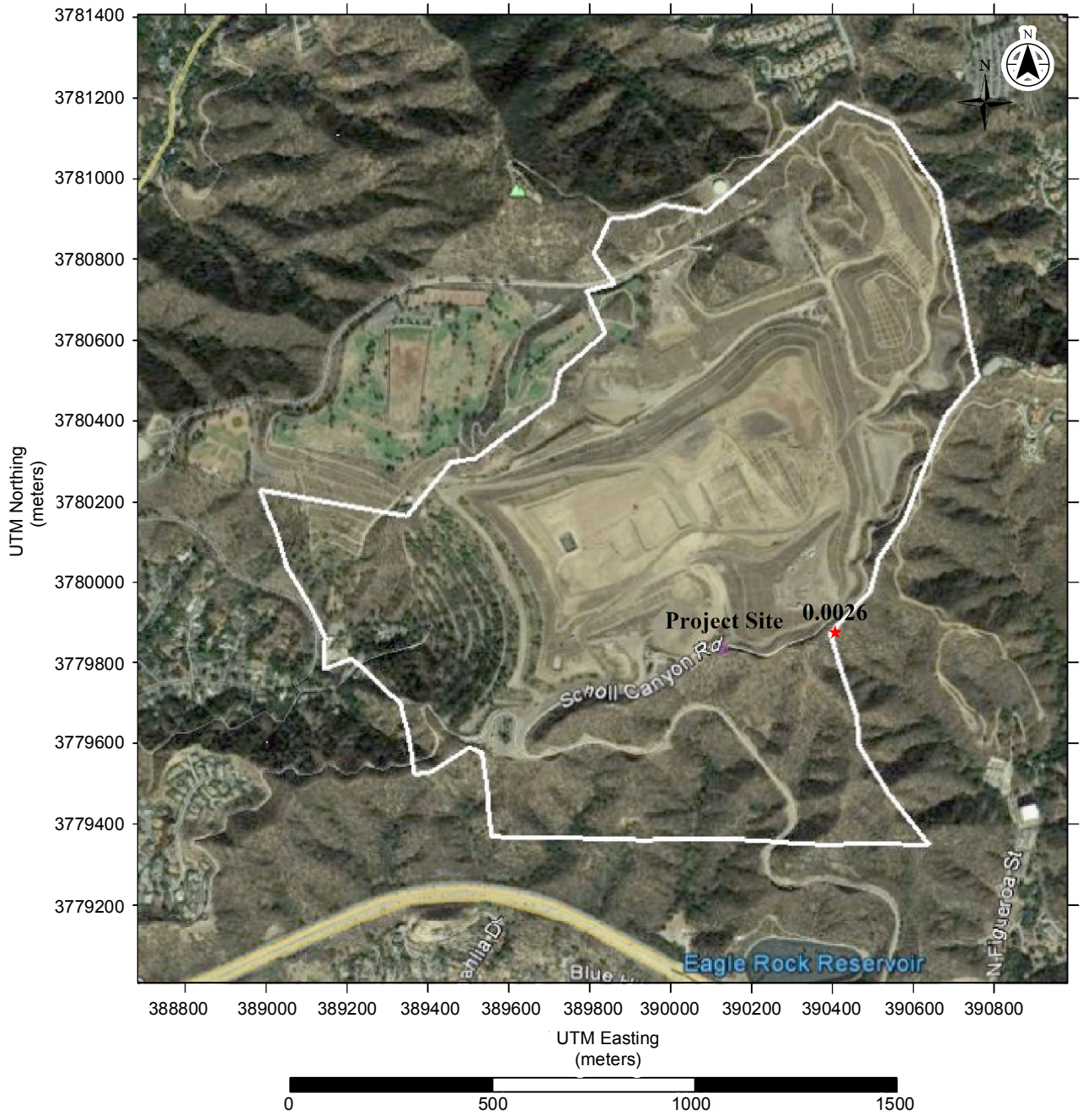
Client/Project
City of Glendale Water and Power
Biogas Renewable Generation Project
Environmental Impact Report

Figure No.
4.2-1l

Title
AERMOD Output for Annual Average PM10/2.5 Concentrations (ug/m³)

This page has been intentionally left blank.

C:\Users\jhrook\Desktop\2057123300\mxd\20170721\Fig3_3_2J_AERMOD_1st_Highest_1hr_SO2_20170723.mxd Revised: 2017-07-23 By: jhrook



Modeling performed by Montrose Air Quality Services

Stantec

Project Location
Glendale, CA

Project No.: 2057123300
Prepared by JT on 2017-07-21
Technical Review by CH on 2017-07-21

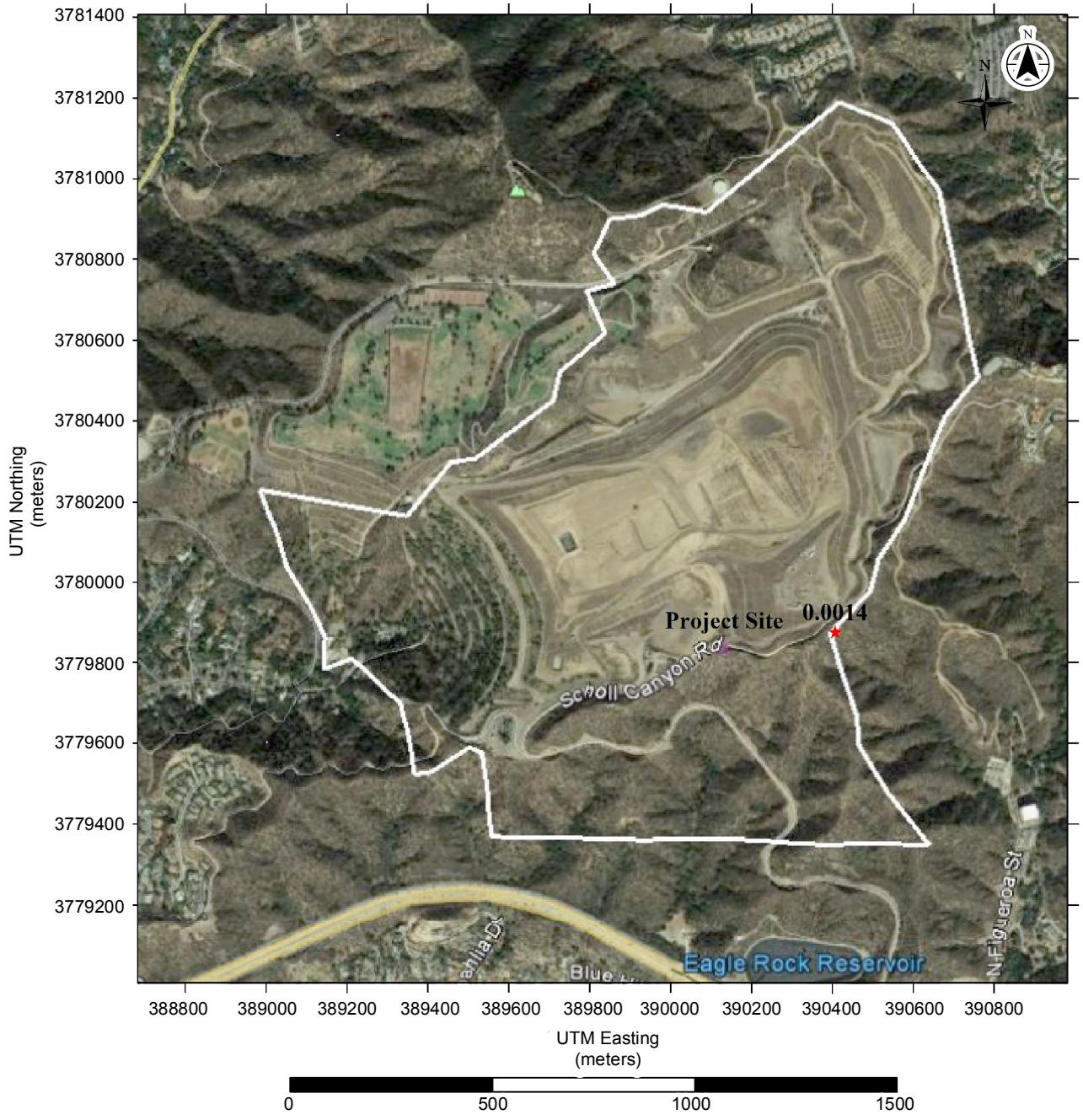
Client/Project
City of Glendale Water and Power
Biogas Renewable Generation Project
Environmental Impact Report

Figure No.
4.2-1J

Title
AERMOD Output for 1st highest 1-hourly SO_2 Concentrations (ppm)

This page has been intentionally left blank.

C:\Users\jfrook\Desktop\205712300\mxd\20170721\Fig3_3_2K_AERMOD_4th_highest_1hr_SO2_20170723.mxd Revised: 2017-07-23 By: jfrook



Modeling performed by Montrose Air Quality Services

Stantec

Project Location
Glendale, CA

Project No.: 205712300
Prepared by JT on 2017-07-21
Technical Review by CH on 2017-07-21

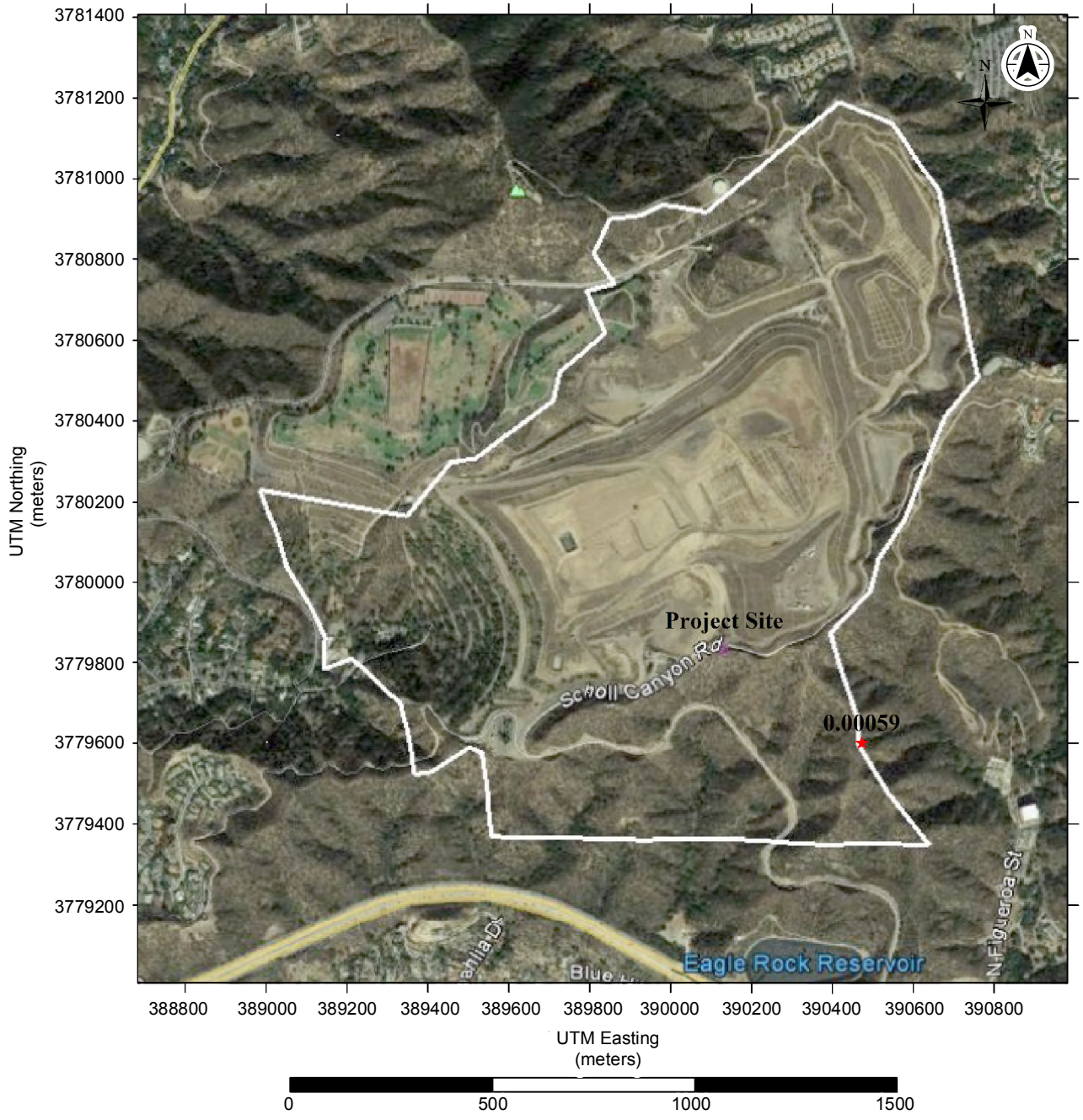
Client/Project
City of Glendale Water and Power
Biogas Renewable Generation Project
Environmental Impact Report

Figure No.
4.2-1K

Title
AERMOD Output for 4th highest 1-hourly SO_2 Concentrations (ppm)

This page has been intentionally left blank.

C:\Users\jtrook\Desktop\205712300\mxd\20170721\Fig3_3_2L_AERMOD_1st_highest_24hr_SO2_20170723.mxd Revised: 2017-07-23 By: jtrook



Modeling performed by Montrose Air Quality Services

Stantec

Project Location
Glendale, CA

Project No.: 205712300
Prepared by JT on 2017-07-21
Technical Review by CH on 2017-07-21

Client/Project
City of Glendale Water and Power
Biogas Renewable Generation Project
Environmental Impact Report

Figure No.
4.2-1L

Title
AERMOD Output for 1st highest 24-hour SO_2 Concentrations (ppm)

This page has been intentionally left blank.

Due to the application of SCAQMD BACT; the offsetting of emissions from SCAQMD priority reserve; and compliance with all applicable laws, ordinances and regulations; air quality impacts of the proposed Project are less than significant for all pollutants other than CO as shown in Tables 13 For all pollutants other than CO, daily mass emissions are below the thresholds of significance that are included in Table 13. Pursuant to SCAQMD policy, an ambient air quality impact analysis was then conducted to determine the significance of CO emissions. Table 15 and Figures 4.2-1A through 4.2.1L show ambient air quality impact analysis results for all criterial pollutants, including CO, demonstrate that project impacts are less than significant and would not conflict or obstruct implementation of the air quality plan.

4.2.4.5 Mitigation Measures

No mitigation measures are required.

Threshold: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard?

See Section 4.2.5, Cumulative Impacts, below for a discussion of cumulative air quality impacts.

Threshold: Expose sensitive receptors to substantial pollutant concentrations?

In addition to the regional significance thresholds, SCAQMD has also developed LSTs to screen projects for potentially substantial localized impacts from daily emission levels from construction and operation based on the project location, size, and distance to the nearest sensitive receptor, which includes residential homes, schools, hospitals, and nursing homes. The nearest sensitive receptors are located more than 2,200 feet from the emission sources. **Figure 4.2-2** shows the location of the sensitive receptor relative to the proposed Project site.

This page has been intentionally left blank.

Project Location
Glendale, CA

Project No.: 205712330
Prepared by JT on 2017-07-21
Technical Review by CH on 2017-07-21

Client/Project
City of Glendale Water and Power
Biogas Renewable Generation Project
Environmental Impact Report

Figure No.
4.2-2

Title
Nearest Sensitive Receptor Location

Stantec

This page has been intentionally left blank.

Localized Construction Impacts

As discusses previously in this report, LSTs for the proposed project are based a project area of two acres because LSTs for a larger project are less stringent. SCAQMD requires the mass rate look-up table in the "Finalized Localized Significance Threshold Methodology" document to be used. **Table 16** shows that the impacts of Project construction emissions to the localized air quality are below the significance thresholds.

Table 16 Localized Significance Threshold Construction Analysis

Pollutant Type	Max. Daily Emissions (lbs./day)	SCAQMD Significance Threshold for Construction (lbs./day)	Exceed Threshold (yes/no)
NO_X	41	175	NO
CO	33	7,957	NO
PM10	8.2	160	NO
PM2.5	4.9	82	NO

Notes:
a) The maximum daily emissions for construction activity are the emissions from the earth-moving activity.

Based on **Table 16**, the air quality impact of construction activity to the nearest sensitive receptor will be less than significant.

Mitigation Measures

No mitigation measures are required.

Localized Operation Impacts

Table 17 compares the impacts of project operation emissions to the localized air quality threshold based on the SCAQMD look-up table.

Table 17 Localized Significance Threshold Operation Analysis

Pollutant Type	Net Operation Emissions (lbs./day)	SCAQMD Significance Threshold (lbs./day)	Exceed Threshold (yes/no)
NO_X	75	175	NO
CO	877	7,957	NO
PM10	[4]	39	NO
PM2.5	[4]	20	NO

Notes:
- The net operation emissions include the maximum daily emissions from engines less baseline emissions.

As shown in **Table 17**, the air quality impact of operation activity to the nearest sensitive receptor is expected to be less than significant.

In addition to mass emission analysis, air dispersion modeling was performed to estimate the concentrations of NO_2, CO, PM10 and PM2.5 from the operational emissions of the proposed Project to determine the localized air quality impacts on the state and federal ambient air quality standards.

Table 18 summarizes the results of the model and compares them with the ambient air quality standards. Detail model input and output information is provided in Appendix B.3.

Table 18 AERMOD Model Output

Pollutant	Averaging Period	Project Impact	Background[a]	New Ambient	Limiting Standard	Type of Standard
NO_2[b]	1-HR	0.030 ppm	0.075 ppm	0.105 ppm	0.18 ppm	CAAQS
NO_2[b]	1-HR (98^{th} %)	0.014 ppm	0.060 ppm	0.074 ppm	0.10 ppm	NAAQS
NO2[c]	Annual	0.00015 ppm	0.017 ppm	0.017 ppm	0.03 ppm	CAAQS
CO	1-HR	0.0145 ppm	3.0 ppm	3.01 ppm	20 ppm	CAAQS
CO	8-HR	0.0344 ppm	1.8 ppm	1.83 ppm	9 ppm	CAAQS
PM10	24-HR	1.07 ug/m^3	96 ug/m^3	97.07 ug/m^3	Allowable increase of 2.5 ug/m^3	CAAQS/SCAQMD Allowable Increase
PM10[d]	24-HR (6^{th} highest over 5 years)	0.065 ug/m^3	96 ug/m^3	96.065 ug/m^3	150 ug/m^3	NAAQS
PM10	Annual	0.118 ug/m^3	35.4 ug/m^3	35.52 ug/m^3	Allowable increase of 1.0 ug/m^3	CAAQS/SCAQMD Allowable Increase
PM2.5	24-HR	1.07 ug/m^3	59.9 ug/m^3	60.97 ug/m^3	Allowable increase of 2.5 ug/m^3	CAAQS/SCAQMD Allowable Increase
PM2.5	24-HR (8^{th} highest)	0.35 ug/m^3	38.0 ug/m^3	38.35 ug/m^3	Below SIL of 1.2 ug/m^3	EPA Significant Impact Level (SIL)
PM2.5[e]	Annual	0.118 ug/m^3	12.38 ug/m^3	12.50 ug/m^3	Below SIL of 0.3 ug/m^3 Allowable increase of 1.0 ug/m^3	EPA Significant Impact Level (SIL) CAAQS/SCAQMD Allowable Increase

Notes:

a. The background values are based on the highest concentrations monitored during 2014 through 2018.

b. The NO_2 1-hour modeling was refined using the AERMOD Ambient Ratio Method Version 2 (ARM2) option.

c. The NO_2 annual modeling was refined using the AERMOD ARM option, which assumed an 80% conversion factor of NO_X to NO_2.

d. The PM10 24-hour modeled values were based on the maximum 6^{th} highest concentration over 5 years period.

Pollutant	Averaging Period	Project Impact	Background[a]	New Ambient	Limiting Standard	Type of Standard
e. The PM2.5 24-hour modeled values were based on the 8th highest concentration averaged over 5 years period with the background concentrations of 98th percentile of 24-hour data averaged over 5 years period.						
f. There are receptors surrounding the facility at lower and higher elevations than the emission sources. The model was run on non-default option (flat terrain) on all receptors at lower elevations; and a default option (complex terrain) was selected to on receptors above the emission sources base elevation. The project impact values shown are the highest values from both model runs.						

Data Source: The output of air dispersion model conducted using Providence BEEST AERMOD software (version 16216r).

The values shown in **Table 18** are the highest pollutants concentration values from operating the proposed electrical generating units at any receptors outside the SCLF boundary. These values are below the significance thresholds; therefore, the localized air quality impacts during the operation activities of the proposed Project are expected to be less than significant.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than Significant Impact

Toxic Air Contaminants Health Impacts

4.2.4.6 Toxic Air Contaminant Emissions Impact Due to Earth Moving Activity During Construction Phase

TAC emissions associated with earth moving activity will consist primarily of combustion byproducts from off-road equipment and vehicle trips. Project construction is proposed to take place over a period of 18 months. TAC emissions from construction activity will not have significant health impacts relative to cancer and non-cancer chronic risks because these risks typically occur over continuous exposure for eight to 30 years.

Additionally, the impacts of earth moving activity will typically occur within the Project fence line. The nearest residential and worker receptor is more than 2,200 feet to the east of the emission sources. Therefore, the TAC emission impacts from earth moving activity are expected to be less than significant.

Mitigation Measures

No mitigation measures are required.

4.2.4.7 Toxic Air Contaminant Emission Impacts During Operational Phase

The proposed Project site is located within the boundaries of SCLF in Los Angeles County northwest of the intersection between Ventura Freeway (State Route 134) and State Route 2. The nearest residence is located approximately one-half mile to the east of the proposed Project site. The nearest non-residential sensitive receptors are Dahlia Heights Elementary School, Eagle Rock Montessori School, and California Academy for Liberal Studies Charter Middle School. These schools are located within one mile

to the south of the proposed Project site. Toxic pollutant emission concentrations from the proposed Project will disperse substantially before reaching these sensitive receptors.

This section discusses whether the TAC emissions from the proposed Project will have the potential to cause significant public health impacts in the surrounding area. A detailed Tier IV Health Risk Assessment was performed to quantify and assess potential health risk impacts. The Health Risk Assessment modeling was conducted using the air dispersion model (BEEST AERMOD) and the ARB).HARP2

The Health Risk Assessment generally consists of the following steps to estimate health impacts:

- Identify the types and amount of toxic air contaminants generated from the project with consideration of operating profiles, fuel consumption and emission control systems;
- Estimate ground level TAC concentrations at each receptor location using air dispersion modeling;
- Estimate the amount of pollutants to which people could be exposed through inhalation, ingestion, and dermal contact; and
- Characterize the potential health risks by comparing worst-case exposure to safe standards based on known health effects.

4.2.4.8 Toxic Air Contaminant emissions inventory

TAC emissions associated with the proposed Project will consist primarily of combustion byproducts produced by the electrical generating units. TACs are compounds designated by the California Office of Environmental Health Hazard Assessment (OEHHA) as pollutants that may cause a significant health hazard.

TAC emissions were calculated based on the following parameters:

- Concentrations of TAC compounds are based on the average analysis results of LFG samples taken in the years 2013 to 2015. The Sanitation Districts of Los Angeles County (LACSD) has compiled subsequent emissions and fuel analyses during 2016 through 2018. The subsequent test results indicate a decrease in many toxic pollutants on a lb./MMBtu basis relative to the 2013-2015 analyses. Because the 2016-2018 emission rates and resulting health risks are lower than what was reflected in the initial MND assessment, the more conservative MND values from 2013-2015 were used for this EIR.
- Concentrations of additional TAC compounds are based on the USEPA AP-42, *Chapter 2.4: Municipal Solid Waste Landfills, Table 2.4-1, Default Concentrations of LFG Constituents*.
- Formaldehyde emission factors are obtained from ARB California Air Toxics Emission Factors (CATEF) database (http://www.arb.ca.gov/app/emsinv/catef_form.html) for engines. For flares, the emission factor is based on SCAQMD *Supplemental Instruction for AB2588 Facilities for Reporting Their Quadrennial Air Toxic Emissions Inventory*. The AB2588 emission factors have generally been shown to be more conservative than emission factors that have been measured by LACSD.
- The concentration of organic toxics in the landfill gas will be reduced by the combustion process of the engines. Residual post-combustion organic compounds will be further controlled through

the oxidation reaction due to the use of a catalytic converter. The control efficiency of RICE is calculated based on the NMOC destruction efficiency of 86.1 percent for non-halogenated species and 93.0 percent for halogenated species within the collected landfill gas per USEPA AP-42, Chapter 2.4, Table 2.4-3. The catalyst destruction efficiency for post-combustion organic TACs is 97.7 percent, which is the default control efficiency used in the SCAQMD Rule 1401 Calculator.

- An ammonia concentration of 5 ppmv at 15 percent oxygen is based on the SCAQMD BACT determination for a similar project (LFG-fired RICE at Frank R. Bowerman landfill).

Since Polycyclic aromatic hydrocarbons (PAH) concentrations are not detected in the SCLF gas analysis and the EPAUS AP-42 study on default chemical concentrations for LFG constituents shows no detection on PAH, they are not reflected in the toxic emission inventory. The absence of PAH from the inventory is also in accordance with SCAQMD engineering analyses for similar landfills and consultation with LACSD.

As discussed in the previous sections of this report, the MND previously prepared for this Project includes emissions from LFG combustion in the flare system during construction and emissions from LFG combustion in the RICE for the operational phase of the proposed Project. For the analysis considered in this EIR, flare operations are included in the construction phase of the proposed Project as well as pre-Project operations. **Table 19** summaries the TAC emissions from the RICE during Project operations. **Table 19** also compares Project TAC emissions with TAC emissions from the flare operations that occur as baseline conditions and will continue through the construction phase of the proposed Project. Detailed emission calculations for TACs are provided in Appendix B.4.

Table 19 TAC Emission Summary – Project

TAC	Chemical Abstracts Service # (CAS#)	Engines (lb./hr.)	Flares (pre-Project and Construction) (lb./hr.)
1,1,1 – Trichloroethane	71-55-6	3.87E-06	4.34E-05
1,1,2,2 – Tetrachloroethane	79-34-5	2.57E-04	2.89E-03
1,2 – Dibromoethane	106-93-4	1.06E-05	1.19E-04
1,1 – Dichloroethane	75-34-3	5.33E-06	5.98E-05
1,1 – Dichloroethene	75-35-4	2.54E-06	2.86E-05
1,2 – Dichloroethane	107-06-2	1.39E-05	1.56E-04
1,2 – Dichloropropane	78-87-5	2.81E-05	3.15E-04
2 – Propanol	67-63-0	8.26E-03	4.67E-02
Acetonitrile	75-05-8	1.06E-04	5.99E-04
Acrylonitrile	107-31-1	9.21E-04	5.21E-03
Ammonia	7664-41-7	2.70E-01	0.00E+00
Benzene	71-43-2	3.66E-04	2.07E-03
Benzyl chloride	100-44-7	2.27E-05	2.55E-04
Carbon disulfide	75-15-0	1.21E-04	6.85E-04
Carbon tetrachloride	56-23-5	4.46E-06	5.01E-05

TAC	Chemical Abstracts Service # (CAS#)	Engines (lb./hr.)	Flares (pre-Project and Construction) (lb./hr.)
Carbonyl sulfide	463-58-1	8.07E-05	4.56E-04
Chlorobenzene	108-90-7	2.47E-05	2.77E-04
Chlorodifluoromethane	75-45-6	1.55E-04	1.74E-03
Chloroethane	75-00-3	1.11E-04	1.25E-03
Chloroform	67-66-3	3.30E-06	3.70E-05
Chloromethane	74-87-3	8.44E-05	9.47E-04
Dichlorobenzene	106-46-7	1.66E-04	1.87E-03
Dichlorodifluoromethane	75-71-8	2.62E-03	2.94E-02
Dichlorofluoromethane	75-43-4	3.72E-04	4.18E-03
Dichloromethane (methylene chloride)	74-87-3	1.40E-05	1.57E-04
Ethylbenzene	100-41-4	8.00E-04	4.52E-03
Ethylene dibromide	106-93-4	2.59E-07	2.91E-06
Formaldehyde	50-00-0	9.85E-03	3.51E-01
Fluorotrichloromethane	75-69-4	1.44E-04	1.62E-03
Hexane, n-	110-54-3	1.55E-03	8.78E-03
Hydrogen chloride	7647-01-0	1.78E+00	1.61E+00
Hydrogen sulfide	7783-06-4	3.15E-03	1.78E-02
Mercury (total)	7439-97-6	5.03E-05	4.54E-05
Methyl ethyl ketone	78-93-3	1.40E-03	7.93E-03
Methyl isobutyl ketone	108-10-1	5.14E-04	2.90E-03
Tetrachloroethylene	127-18-4	3.53E-05	3.96E-04
Toluene	108-88-3	1.37E-03	7.77E-03
Trichloroethylene	79-01-6	1.62E-05	1.81E-04
Vinyl chloride	75-01-4	8.03E-06	9.01E-05
Xylenes	1330-20-7	1.41E-03	7.95E-03

Note: Some of the toxic emissions were calculated based on AP-42 and CATEF emission factors; and these default emission factors are typically higher than actual emission factors.

4.2.4.9 Air Dispersion Modeling of Toxic Air Contaminants Emissions

The AERMOD dispersion model was used to estimate the ground level TAC concentration resulting from the proposed Project. A normalized emission rate of one gram per second was used to model each source. Similar to the air quality impact analysis, a uniform Cartesian receptor grid covering an area of 36 square kilometers (8,900 acres) with 50 meters (164 feet) spacing was used in addition to the identification of discrete fence-line receptors.

4.2.4.10 Health Risk Characterization

The result of the dispersion modeling analysis was imported to HARP2 to determine MICR and non-cancer acute and chronic health risks. As defined in SCAQMD Rule 1401, MICR is the estimated probability of a potential maximally exposed individual contracting cancer as a result of exposure to TAC. Cancer risks were estimated based on 30-year continuous exposure duration for residential and sensitive receptors and a 25-year, five day per week, and eight hours per day exposure duration for worker receptors. Based upon SCAQMD Rule 1401 and the SCAQMD CEQA significance thresholds, a cumulative MICR increase less than ten in a million is considered to be less than significant when Best Available Control Technology for Toxics (T-BACT) is used. For this Project, the proposed RICE and the existing flares are expected to reduce a minimum of 98 percent of NMOC, which represents T-BACT. Additionally, a cancer burden greater than 0.5 excess cancer cases in areas with an incremental increase greater than one in one million individuals is considered to be significant.

To assess acute and chronic non-cancer exposures, annual and one-hour TAC ground-level concentrations are compared with the reference (safe) exposure levels (REL), which is developed by OEHHA. A hazard index (HI) is the ratio of TAC exposure of one hour for acute and long-term level for chronic from the facility to the REL. The total HI is calculated separately for acute and chronic effects. A total hazard index of less than one is considered to be below significance. Detail MICR and HI for acute and chronic results are provided in Appendix B.5.

4.2.4.11 Maximum Individual Cancer Risk

Table 20 summarizes the maximum MICR values of residential and worker receptors for each operating scenario.

Table 20 Maximum MICR Values

Equipment Scenario	Max. MICR for Residential Receptor	Max. MICR for Worker Receptor	CEQA Significance Threshold	Exceed Significance Threshold?
IC Engines[a]	4.74E-08	3.32E-09	10.00E-06	NO
Flares (during construction phase)[a,b]	1.24E-07	1.86E-09	10.00E-06	NO

Note:

a) The MICR values are the highest values of any receptors outside the landfill boundary. Since the values are already below the significance threshold of 10.00E-06, no further analysis was conducted to obtain readings at the nearest residential or worker receptors.

b) The cancer risk of the flares was based on 2 years exposure duration for both residential and worker receptors to reflect impact during construction activities.

Data source: the health risk assessment model output using HARP2

4.2.4.12 Chronic and Acute Hazard Index

Table 21 summarizes the overall chronic and acute HI values for each operations scenario. The acute HI values were calculated for each receptor for the combined impact of all chemicals on target organs.

Table 21 Overall HI Values

Equipment Scenario	Chronic Hazard Index		Acute Hazard Index		CEQA Significance Threshold	Exceed Significance Threshold?
	Residential (HIC)	Worker (HIC)	Residential (HIA)	Worker (HIA)		
IC Engines[a]	9.52E-03	9.52E-03	2.16E-03	2.16E-03	1.00	NO
Flares (Construction Phase)[a]	1.22E-03	1.22E-03	1.23E-02	1.23E-02	1.00	NO

Note:

a) The HIC and HIA values are the highest values of any receptors outside the landfill boundary. Since the values are already below the significance threshold of 1.00, no further analysis was conducted to obtain readings at the nearest residential or worker receptors.

Data source: Health risk assessment conducted in 2017,model output using HARP2

As shown in **Table 20** and **21**, MICR, HIC, and HIA values of the proposed Project are below the significance thresholds.

4.2.4.13 Cancer Burden

Pursuant to OEHHA Guideline and SCAQMD policy, if MICR at a representative receptor location is greater than 1.00E-06, an additional analysis must be conducted to determine Cancer Burden (the number of people exposed to a risk of 1.00E-6). As shown in the **Table 20**, the MICR for the proposed Project is less than 1.00E-06; therefore, a Cancer Burden analysis is not required.

Based on the results of health risk assessment shown in **Table 20** and **21**, the toxic emissions from the proposed Project will not expose the nearest sensitive receptors to significance cancer risks, non-cancer acute risks, and non-cancer chronic risks. Additional mitigation measures are not required.

Threshold: Expose sensitive receptors to substantial pollutant concentrations?

Mitigation Measures

No mitigation measures are required.

4.2.4.14 Carbon Monoxide Hotspots

The proposed Project would include a similar number of vehicle trips that already exists as part of operation and maintenance of the LFG collection, conditioning, and flaring operations. Because the proposed Project would not result in an increase in operation phase vehicle trips, there would be no increase in vehicle CO emissions that would have the potential to result in a carbon monoxide. CO emissions during construction activity will be below SCAQMD localized significant impact thresholds. As a result, the potential impact relative to CO hotspots of construction and operation of the Project would not be significant

Mitigation Measures

No mitigation measures are required.

4.2.5 Cumulative Impacts

One local project has been determined to be a related project as defined by CEQA Guidelines 15130(b). The Grayson Repowering Project, which is located approximately five miles west of the SCLF. Extensive analyses of each project were conducted to assess the significance of air quality, public health and greenhouse gas impacts. Each project was independently determined to present impacts that are below significance thresholds.

The Grayson Repower Project EIR is being amended to reflect an alternative project design, including a smaller fossil fuel -based generating platform that will be augmented with distributed renewable generation and a minimum of 50 MW of battery storage capacity. The environmental impacts of the alternative design of the Grayson Repower Project are also expected to be less than significant. Given the distance between the two projects and level of impact from each project, it is reasonable to conclude that the combined impact of the two projects would also be less than significant.

This page has been intentionally left blank.